University of London

REPORTS

FROM

COMMITTEES:

ELEVEN VOLUMES.

—*(7.)*—

LONDON (CITY) TRAFFIC REGULATION;
LONDON (CITY) CORPORATION GAS BILLS;
THAMES NAVIGATION.

Session

1 *February* —— 10 *August* 1866.

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REPORTS FROM COMMITTEES:

1866.

ELEVEN VOLUMES:—CONTENTS OF THE

SEVENTH VOLUME.

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SPECIAL

REPORT

FROM THE

SELECT COMMITTEE

ON THE

LONDON (CITY) TRAFFIC REGULATION BILL;

TOGETHER WITH THE

PROCEEDINGS OF THE COMMITTEE,

MINUTES OF EVIDENCE,

AND APPENDIX.

Ordered, by The House of Commons, *to be Printed,*
13 and 25 *April* 1866.

Thursday, 22*d February*, 1866.

Ordered, That the London (City) Traffic Regulation Bill be committed to a Select Committee of Twelve Members, of whom Five are to be nominated by the Committee of Selection.

Ordered, That it be an Instruction to the Committee, to inquire into the best means of Regulating the Traffic in the Metropolis.

Friday, 9*th March*, 1866.

Committee nominated of—

Sir William Russell.	Mr. Alderman Lawrence.
Mr. Hardy.	Mr. Miller.
Mr. Baring.	Mr. Locke King.
Lord Eustace Cecil.	

Friday, 2*d March*, 1866.

Added by Committee of Selection:

Sir William Jolliffe.	Mr. Guinness.
Sir William Hutt.	Mr. Labouchere.
Mr. Kekewich.	

Ordered, That the Committee have power to send for Persons, Papers, and Records.

Ordered, That Five be the Quorum of the Committee.

Monday, 19*th March*, 1866.

Ordered, That the Petition of Manufacturers, Millers, &c. of the Metropolis and vicinity South of the Thames, for uniform Regulation of the Metropolitan Traffic, be referred to the Committee.

Wednesday, 11*th April*, 1866.

Ordered, That the Petition from the Metropolis, against exceptional Legislation to regulate Traffic in London, be referred to the Committee.

Friday, 13*th April*, 1866.

Ordered, That leave be given to the Committee to make a Special Report.

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SPECIAL REPORT.

THE SELECT COMMITTEE to whom the LONDON (CITY) TRAFFIC REGULATION BILL was referred, and who were instructed "to inquire into the best means of Regulating the TRAFFIC of the METROPOLIS"; ——HAVE agreed to the following SPECIAL REPORT:—

1. YOUR COMMITTEE have heard evidence as to the general street traffic of the Metropolis, and as to the attempts made to regulate it under several Acts of Parliament passed to give to the various authorities in the City, and in the Metropolitan Police District, power for this purpose.

2. Your Committee are of opinion, that any legislation which may be necessary for the further regulation of the public traffic within the City of London would be inefficacious and incomplete, unless corresponding regulations were in force in a much larger portion of the Metropolis, and that such regulations should be submitted for the approval of the Secretary of State, by the Commissioners of Police for their respective districts.

3. Entertaining these views, your Committee think that it is not desirable to proceed with the Bill referred to them, which is limited to the Regulation of the Traffic within the City of London; Your Committee therefore recommend that a general measure to correct the present defects in the law, and to give additional powers to regulate Traffic in every portion of the Metropolis, should be brought forward by the Government.

REPORT.

THE SELECT COMMITTEE to whom the LONDON (CITY) TRAFFIC REGULATION BILL was referred have agreed to Report the same without Amendment.

PROCEEDINGS OF THE COMMITTEE.

Tuesday, 13*th March*, 1866.

MEMBERS PRESENT:

Mr. Kekewich.	Mr. Guinness.
Lord Eustace Cecil.	Sir William Jolliffe.
Mr. Labouchere.	Sir William Russell.
Mr. Miller.	

Mr. MILLER was called to the Chair.

[Adjourned till To-morrow, at Two o'clock.

Wednesday, 14*th March*, 1866.

MEMBERS PRESENT:

Sir William Jolliffe.	Mr. Alderman Lawrence.
Sir William Russell.	Mr. Gathorne Hardy.
Lord Eustace Cecil.	Mr. Kekewich.
Mr. Guinness.	Mr. Miller.
Mr. Ayrton.	Mr. Labouchere.

Sir WILLIAM JOLLIFFE was called to the Chair.

The Committee deliberated.

[Adjourned till Tuesday next, at Twelve o'clock.

Tuesday, 20*th March*, 1866.

MEMBERS PRESENT:

Sir WILLIAM JOLLIFFE in the Chair.

Mr. Labouchere.	Sir William Russell.
Mr. Locke King.	Lord Eustace Cecil.
Mr. Alderman Lawrence.	Mr. Miller.
Mr. Baring.	Mr. Kekewich.
Mr. Hardy.	

Sir *Richard Mayne* examined.

[Adjourned till Friday next, at Twelve o'clock.

Friday, 23*d March*, 1866.

MEMBERS PRESENT:

Sir WILLIAM JOLLIFFE in the Chair.

Mr. Hardy.	Mr. Locke King.
Mr. Alderman Lawrence.	Lord Eustace Cecil.
Sir William Russell.	Mr. Miller.
Mr. Labouchere.	

Colonel *Fraser*, Mr. *Henry Browse*, and Mr. *J. P. Knight*, were severally examined.

[Adjourned till Friday, 13 April, at Twelve o'clock.

Friday, 13th April, 1866.

MEMBERS PRESENT:

Sir WILLIAM JOLLIFFE in the Chair.

Mr. Kekewich.	Mr. Locke King.
Mr. Guinness.	Lord Eustace Cecil.
Sir William Russell.	Mr. Miller.
Mr. Alderman Lawrence.	Mr. Gathorne Hardy.
Mr. Baring.	Mr. Labouchere.

The Committee deliberated.

Special Report proposed by the Chairman, read 1°, as follows:

"1. Your Committee have heard evidence as to the general street traffic of the Metropolis, and as to the attempts made to regulate it under several Acts of Parliament passed to give to the various authorities in the City, and in the Metropolitan Police District, power for this purpose.

"2. Your Committee are of opinion that any legislation which may be necessary for the further regulation of the public traffic within the City of London would be inefficacious and incomplete, unless corresponding regulations were in force in a much larger portion of the Metropolis, and that such regulations should be submitted before the Secretary of State by the Commissioners of Police for their respective districts.

"3. Entertaining these views, your Committee think that it is not desirable to proceed with the Bill referred to them, which is limited to the regulation of the traffic within the City of London; your Committee therefore recommend that a general measure to correct the present defects in the law, and to give additional powers to regulate traffic in every portion of the Metropolis, should be brought forward by the Government."

Question, That the proposed Report be now read a second time, and considered paragraph by paragraph—put, and *agreed to.*

Paragraph 1 *agreed to.*

Paragraph 2 amended, and *agreed to.*

Paragraph 3, *agreed to.*

Question, That this Report be the Special Report of the Committee to the House—put, and *agreed to.*

Resolved, THAT the Chairman do move the House for power to make a Special Report.

LONDON (CITY) TRAFFIC REGULATION BILL.

Preamble read.

Ordered, To Report, without any Amendment.

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Friday, 23*d March* 1866.

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MINUTES OF EVIDENCE.

Tuesday, 20th March 1866.

MEMBERS PRESENT:

Mr. T. G. Baring.	Mr. Locke King.
Lord Eustace Cecil.	Mr. Alderman Lawrence.
Mr. Gathorne Hardy.	Mr. Labouchere.
Sir William Jolliffe.	Mr. Miller.
Mr. Kekewich.	Sir William Russell.

THE RIGHT HONOURABLE SIR WILLIAM G. H. JOLLIFFE, IN THE CHAIR.

Sir RICHARD MAYNE, K.C.B., called in; and Examined.

Sir *R. Mayne*, K.C.B.

20 March 1866.

1. *Chairman.*] YOU are the Commissioner of Metropolitan Police?—Yes; or, more correctly, of the Police of the Metropolis.

2. The subject of the traffic of the metropolis comes under your knowledge in that capacity?—Necessarily, and there are some laws that specially devolve upon the Commissioner, the regulation of that traffic.

3. Can you state what those laws are that refer particularly to the district over which you preside?—There are laws which relate to the general regulations of omnibuses and public carriages, or hackney carriages. I will refer, if you please, first to those Acts, though they do not relate exclusively to the metropolitan district.

4. But the regulation of the hackney carriages is entirely under the Commissioner of Police, is it not?—The regulation of the drivers and conductors of omnibuses, and of the drivers of hackney carriages, and public carriages, is under the Commissioner of Police.

5. And are the licenses granted by you?—The licenses are granted by me, to the drivers and conductors. The licenses for the carriages themselves are granted by the Board of Inland Revenue.

6. But the licenses of the drivers and conductors are granted by the Commissioner of the Metropolitan Police?—Yes.

7. That includes cabs, does it not?—Yes, cabs and omnibuses. The earliest Act now in force, I believe, is the 1 & 2 Will. 4, c. 22.

8. To what does that Act refer?—I will read the title of it: "An Act to amend the Laws relating to Hackney Carriages and to Waggons, Carts, and Drays used in the Metropolis; and to place the collection of the Duties on Hackney Carriages, and on Hawkers and Pedlars in England under the Commissioners of Stamps."

9. Will you state to the Committee what authority that Act gives you to deal with the hackney carriages, and also with the drays and carts and other vehicles?—Yes; I will refer only to those provisions which relate to the traffic. Section 51 provides against "improperly standing with carriages or feeding horses in the streets; refusing to give way to, or obstructing any other driver." Then there is a clause which has since, in fact, become obsolete, allowing two carriages to stand beside one another in Palace Yard. Then the 53d section provides for "a clear space of 10 feet to be left after every four hackney carriages on any standing," that there should be a clear space to allow people to pass. Section 54 is, "the Court of Aldermen are authorised to make orders for regulating hackney carriages in the City of London and in the Borough of Southwark." Then there is in section 55 a penalty for leaving carriages unattended.

10. What authority did that Act give to you to deal with carts and drays and heavy traffic?—The only authority of that kind I think in this Act is that contained in section 59, which requires the "names and places of abode of owners of waggons, carts, &c., to be painted thereon." Then there is a penalty for using them without having such names upon them.

11. Will you state shortly the provisions of any other Acts which bear upon the subject?—There are various provisions in this Act, I think, as to the misconduct of the drivers. But there is a subsequent Act, the 6th & 7th Vict. c. 86, which enacts further provisions than are contained in the first Act. The object of the 6th & 7th Vict. c. 86, is stated thus: "An Act for regulating Hackney and Stage Carriages in and near London." There is a further provision, section 4, with reference to waggons, but it only directs that the place of the abode of a peer of the realm painted on any carriage is to be deemed a compliance with the provisions of the Act 1 & 2 Will. 4, c. 22, instead of having the name also. There is also a provision which relates indirectly to the regulation of public carriages

Sir *R. Mayne*, K.C.B.

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and omnibuses. Section 7 provides that the proprietor of every metropolitan stage carriage shall keep distinctly painted both on the outside and inside of the same, in such a manner and in such a position as shall from time to time be directed by the Registrar the words "Metropolitan Stage Carriage." I may here state that all the duties which under this Act were to be done by the Registrar were transferred afterwards to the Commissioner of Police of the Metropolis by the Act of the 13th of the present Queen, chapter 7. The office of Registrar was abolished, and all the duties previously performed by him as to granting licenses to the drivers and conductors were transferred to the Commissioner of Police.

12. That was when the Hackney Carriage Office was abolished?—Yes, or rather there had been a previous Act abolishing the Hackney Carriage Office when the office of registrar was created, and then that office was abolished by the 13th of the present Queen, chapter 7, and the duties of the office were transferred to the office of the Commissioner of Police. There are various regulations, which for this purpose I need not read to the Committee, as to the mode in which licenses are to be granted, &c.

13. The first Act you quoted, the 1st and 2d Will. 4th, cap. 22, refers to the City as well as to the metropolitan district, providing that the City also may have power to make regulations, does it not?—Yes, the licenses of the drivers and conductors of course apply in the City the same as in any other place, so that the licenses for the whole are granted by the Commissioner of Police of the Metropolis. The City authorities have nothing to do as regards the granting of licenses to drivers or conductors of omnibuses.

14. Are there any powers exercised by you under any other Statutes that are not exercised within the City?—There are powers given jointly in some Acts, which I will refer to immediately, and some that are given separately; for instance, in this Act there are general provisions of this kind, which may be considered to relate to the traffic. By section 28 of the 6th & 7th Vict. c. 86, it is enacted: "That every driver of a hackney carriage, or driver or conductor of a metropolitan stage carriage, who shall be guilty of wanton or furious driving, or who by carelessness or wilful misbehaviour shall cause any hurt or damage to any person or property, in any street or highway, and also every driver or conductor, who, during his employment shall be drunk, or shall make use of any insulting or abusive language, or shall be guilty of any insulting gesture or any misbehaviour, shall, for every such offence, forfeit the sum of 3*l.*; or it shall be lawful for the justice before whom such complaint shall be brought, if in his discretion he shall think proper, instead of inflicting such penalty, forthwith to commit the offender to prison for any period not exceedingtwo calendar months." Then there is a provision as to damage, enabling the party injured to recover a sum not exceeding 10*l.* for damage done by a hackney carriage driver, or an omnibus driver, to any carriage or person in the streets. Then there is a provision in section 29, for standings for hackney carriages to be appointed; power is given to the Commissioner of Police of the Metropolis to make regulations with respect to metropolitan stage carriages within the metropolitan district by section 29, and by section 32, to the Lord Mayor and Aldermen to make regulations with respect to such carriages in the City and the Borough of Southwark. Then there is section 33, which makes regulations and certain provisions with regard to the traffic, "that every driver of a hackney carriage, who shall ply for hire elsewhere than at some standing or place appointed for that purpose, or who, by loitering, or by any wilful misbehaviour, shall cause any obstruction in or upon any public street, road, or place; and also every driver or conductor of any metropolitan stage carriage, who, by loitering, or any wilful misbehaviour, shall cause any obstruction in or upon any public street, road, or place, or shall improperly delay such carriage on any journey, or wilfully deceive any person in respect to the route or destination thereof, or who shall refuse to admit and carry" persons at the proper fares, or who "shall stop such carriage opposite to the end of any street, or upon any place where foot passengers usually cross the carriage way, or who shall ply for hire or passengers by blowing a horn, or by using any other noisy instrument within the limits of the metropolis, as defined by the said Act of the second year of the reign of his late Majesty; and every conductor of a metropolitan stage carriage, who shall allow any person beside himself, to ride upon the steps, or in the place provided for him; and every driver of a hackney carriage, whether hired or unhired, allowing any person besides himself, not being the hirer, or a person employed by such hirer, to ride on the driving box; and every driver or conducter of any metropolitan stage carriage, who shall smoke whilst acting in such capacity, after an objection taken by any person riding in or upon such carriage, shall, for every such offence, forfeit the sum of twenty shillings." These enactments all apply to the City of London, as well as to the rest of the metropolis. It is a general law, applying to both. I think these are the only provisions in these Acts which relate to the traffic.

15. Those embrace pretty nearly all the regulations that are made with regard to the hackney carriage traffic, do they not?—Yes, those made by law; but there is a further power given to the Commissioner of Metropolitan Police within the metropolitan district, and to the Commissioner of Police, I think, in the City of London, by the 2d & 3d Vict. c. 47. I will first state the provisions of the Act, as far as it relates to the metropolitan district, and then those which relate to the City, the provisions for which are nearly corresponding, but they are to be exercised and carried out by a different authority.

16. There are Acts also (certainly there is one Act in 1863) which refer solely to the City?—The Act of 1863 refers solely to the City. I will refer to that immediately. But in this Act, the 2d & 3d Vict. c. 47, entitled, "An Act for further improving the Police in and near the Metropolis," passed in the year 1839, there are provisions to this effect: there is, first of all, by the 51st section, this provision, "That on the application of the minister or churchwardens of any church, chapel, or other place of public worship within the metropolitan police district to the Commissioner of Police, it shall be lawful for the said Commissioner to make orders for regulating the route and conduct of persons who shall drive any cart or carriage, or who shall drive any cattle, sheep, or pigs, or other animals within such parish or place during the hours of Divine service on Sunday, Christmas-day, Good Friday, or any day

day appointed for a public fast or thanksgiving." Then it states how these orders shall be posted up so as to give public notice. And the next section gives a more general power, which is the power under which regulations are made upon all public occasions, and also in the neighbourhood of the Houses of Parliament and the Palace, and so forth. Section 52 enacts, "That it shall be lawful for the Commissioners of Police" (that means of the metropolis) "from time to time, and as occasion shall require, to make regulations for the route to be observed by all carts, carriages, horses, and persons, and for preventing obstruction of the streets and thoroughfares within the metropolitan police district, in all times of public processions, public rejoicings or illuminations, and also to give directions to the constables for keeping order, and for preventing any obstruction of the thoroughfares in the immediate neighbourhood of Her Majesty's palaces and the public offices, the High Court of Parliament, the courts of law and equity, the police courts, the theatres, and other places of public resort, and in any case when the streets or thoroughfares may be thronged or may be liable to be obstructed." Then in a subsequent clause, section 54, which is divided into a great many paragraphs, there are some provisions which relate to the traffic of the streets; as for instance, paragraph 4 of that section: "Every person having the care of any cart or carriage who shall ride on any part thereof, on the shafts, or on any horse or other animal drawing the same, without having and holding the reins, or who shall be at such a distance from such cart or carriage as not to have the complete control over every horse or other animal drawing the same," and the next paragraph, "Every person who shall ride or drive furiously, or so as to endanger the life or limb of any person, or to the common danger of the passengers in any thoroughfare," and the next paragraph, "Every person who shall cause any cart, public carriage, sledge, truck, or barrow, with or without horses, to stand longer than may be necessary for loading or unloading or for taking up or setting down passengers, except hackney carriages standing for hire in any place not forbidden by law, or who by means of any cart, carriage, sledge, truck, or barrow, or any horse or other animal shall wilfully interrupt any public crossing, or wilfully cause any obstruction in any thoroughfare;" and the next (the 7th) paragraph is, "Every person who shall lead or ride any horse or other animal, or draw or drive any cart or carriage, sledge, truck, or barrow, upon any footway or curbstone, or fasten any horse or other animal so that it can stand across or upon any footway." The next is, "Every person who shall roll or carry any cask, tub, hoop, or wheel, or any ladder, plank, pole, showboard, or placard, upon any footway, except for the purpose of loading or unloading any cart or carriage, or of crossing the footway." Any one committing any of these offences is liable to a penalty of 40*s.*, and if the offence be committed within view of the constable the person may be apprehended without warrant. Then there is a provision for a penalty of 40 *s.* upon persons who disregard the regulations which I have read before, which might be made by the Commissioner.

17. These are the Acts that refer especially to the metropolitan police district?—Yes; I will read or refer immediately to the Act for the City of London, which has, I believe, exactly similar provisions.

18. Before you go to that, will you tell the Committee whether there is any other body, parochial or otherwise, that have any law by which they are entitled to regulate the traffic within the metropolitan district?—I think there is none.

19. It solely rests at present with the Commissioners of Police of the metropolis to make the regulations, does it?—I think so.

20. The law has put it entirely into your hands?—Entirely, I think. There are some further provisions in the Act which I have last referred to; but they are about leaving cellars open and so on; they do not relate so immediately to the present purpose as those which I have read.

21. Will you state to the Committee who has the authority within the City of London?—There was an Act passed in the same year as this from which I have quoted; it was a year when there was a question raised about the amalgamating of the City and Metropolitan Police; and that Act having passed for the Metropolitan Police, the City brought in a similar Act, the 2 & 3 Vict. c. 94. I believe it is a private or local Act, and there were provisions in it just for the same purpose as those in the other Act. I will refer to a section, for instance; section 20 gives power with regard to regulating the route of carriages during the hours of Divine service on Sundays, "on the application of the minister or churchwarden of any church, chapel, or other place of public worship;" that is given to the Commissioners of the City Police, with the consent of the Mayor and Aldermen.

22. Mr. *Miller.*] What is the title of that Act?—"An Act for Regulating the Police in the City of London."

23. Not on Sunday particularly?—No, that clause relates to Sunday particularly; but a subsequent clause, section 22, gives power to "the said Commissioner" (that is, the Commissioner of Police of the City of London), "with the consent of the Court of Mayor and Aldermen, from time to time, and as occasion shall require, to make regulations." Therefore, the same powers were given to the Commissioner of the City Police, subject to the approbation of the Court of Mayor and Aldermen, as were given, as I have mentioned, to the Commissioners of Metropolitan Police, but the places named are different, of course, "in the immediate neighbourhood of the Mansion House and Guildhall of the said City, the Royal Exchange, the Bank of England, the General Post Office, and other places of public resort," taking the most prominent places in the City instead of those mentioned in the metropolitan district.

24. Are there any clauses similar to those which give you the powers you mentioned in the other Act?—Yes; in section 35 of the City of London Police Act, there are the same powers given to the Commissioner of the City Police, in a number of paragraphs, as I have mentioned as being contained in the other Act, 2 & 3 Vict. c. 47. I believe they are exactly the same as those which I have mentioned were made law within the metropolitan district; as, for instance, "to cause any cart, public carriage, with or without horses, to stand longer than necessary for loading." That provision, and several others, are, I believe, word for word the same as they are in the Act, for the police of the metropolis.

25. *Chairman.*] Can you state the date at which powers were first given to the City of

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London to make regulations, and the date at which they first began to make regulations, in the City of London, which are not given to the metropolitan police?—I think there were none until the Act for regulating the routes of cattle.

26. That was in 1857, was not it?—Yes, that was in 1857; but precisely the same powers were given to the Commissioner of Police in the metropolis, subject to the approbation of the Secretary of State, as were given to the Commissioner of Police of the City, subject, I think, to the approbation of the Court of Common Council.

27. In consequence of that power did you issue regulations?—I issued regulations; that is under the 18th section of 20 and 21 Vict. c. 135. That is a local Act, it is entitled "The Metropolitan Market Act, 1857." When I say a local Act, I believe it was brought in by the City of London; it is a local or private Act; I do not know which I ought to call it.

28. It is an Act for regulating the markets?—It is; it is called "The Metropolitan Market Act, 1857." The title is, "An Act to amend an Act of the 21st year of the reign of King George III., 'to prevent the mischiefs that arise from driving cattle within the Cities of London and Westminster and liberties thereof, and Bills of Mortality,' and also to amend 'The Metropolitan Market Act, 1851.'" The provisions of the Act I can give the Committee in a very few words. The Commissioner of the City Police, with the consent of the Common Council, is to make regulations with respect to the driving of cattle within the City.

29. Are you quoting now from the Act of 1857?—Yes, the 18th clause: "It shall be lawful for the Commissioner of the City Police, with the consent of the Common Council, from time to time to make such orders, rules, and regulations as he and they shall deem expedient with respect to the driving of cattle within the police district of the City of London, and also for the Commissioners of the police of the metropolis from time to time to make such orders, rules, and regulations as they shall deem expedient with respect to the driving of cattle within so much of the metropolitan police district as is within the City of Westminster," &c. It is not over the whole of the metropolitan police district, but it relates to the City of Westminster, and the boroughs of Marylebone, Finsbury, the Tower Hamlets, Lambeth, and Southwark.

30. Those are the most populous parts of the metropolitan police district, are they not?—Those are the most populous districts, coming nearly to what was afterwards made the Metropolitan Board of Works district, and which is now called the Metropolis, I see, in "The Cattle Diseases Act."

31. You framed regulations in accordance with the power contained in that section, did you not?—Regulations are framed. I do not know whether it will be necessary to put them in. They are given at length here *(producing a Paper)*, and there was a correspondence with the City of London upon the subject, which I do not know that it is now necessary to refer to particularly, but I know the result was that the City solicitor, with whom I had several communications, urged (I believe at the desire of the Market Committee), that regulations should be made by the Commissioners of the Metropolitan Police, and those regulations were made. I had a correspondence with the City solicitor, and I believe the result was that no regulations have been made within the City with regard to the driving of cattle.

32. With regard to your own regulations, will you describe to the Committee the evils they were intended to prevent, and the effect of your regulations in preventing these evils?—The regulations were principally to limit the hours for driving cattle, and to prevent any cattle being driven through the streets of those parts of the metropolis I have mentioned between the hours of 10 o'clock in the forenoon and 7 o'clock in the afternoon, and there were also regulations, I do not know that I need state them, but they are in considerable detail, describing the routes to be taken by the cattle.

33. It was found extremely inconvenient to the traffic that these animals were driven at all times of the day, was it not?—Yes, and by all sorts of routes.

34. Therefore you limited the time?—I limited them as to time, and also to specific routes.

35. They were not to be driven through the streets between 10 o'clock in the morning and 7 in the evening?—Yes, and then these routes are all laid down for going to and from the Metropolitan Cattle Market. The specific routes are laid down, the streets and roads are marked, by which they should go.

36. Has considerable relief been found from those regulations?—I believe very considerable. I have had no complaints whatsoever, except with regard to the hours. Some of the cattle salesmen objected very much at first to the limitation of the hours, but I believe since then they have accommodated their trade very much to it; there is this exception, that although no alteration was made in the routes, I said, "Between the hours of 10 and 12 in the day, unless special evils arise, I will direct the police not to enforce the regulations:" so that, practically, in a great many of those routes they are not prevented from driving the cattle between 10 and 12 o'clock in the day. They made urgent representations that that would be a great convenience to them in some places, where it seemed to me also that there was no great public inconvenience likely to arise from it, so that I took it upon myself, with the authority of the Secretary of State, without altering the regulations, to say, "I will direct the police not to enforce them between the hours of 10 and 12 o'clock, along certain lines of route," which were not crowded at that time, and in which no public inconvenience was caused by the relaxation.

37. You found it necessary, in some instances, a little to relax the regulations you had at first made?—Yes, between those hours only, reserving to myself the power of enforcing them again; I told them, "If you bring the cattle in very large numbers, or so as in any way which you can avoid to cause inconvenience to the public, the regulations are still binding, and they shall be enforced." I am bound to say that the City authorities said, "If your regulations are effective it is unnecessary for us to make them." But that is not quite so, for animals coming within the hours prescribed by me into the northern part of the City, coming from the Metropolitan Market, reach the limits on the other side of London Bridge, or Blackfriars Bridge, and then they are forced into the metropolitan district, and the police have either to stop them there, which in truth they have properly not the power to do, or else summon the proprietor afterwards; so that, in fact,

fact, inconvenience does arise from there not having been any regulations made in the City of London for the driving of cattle.

38. They have not made any regulations in the City of London?—I have inquired, and I understand that they have not made any.

39. You state that the regulations which you have made out of the City of London render it expedient or necessary, for similar regulations to be made in the City of London?—Yes.

40. So that the traffic in the City depended to a great extent upon the regulations you made out of the City?—I am sure, if the regulations had not been made by me for the surrounding district, the City would have been forced into making them for themselves; but they were to a great degree relieved by the cattle being stopped in the surrounding district.

41. At present, with the relaxations you have described, this regulation works well?—I believe perfectly well. I have not heard for the last two or three years any complaint of it whatever.

42. Mr. *Baring.*] Was not there a memorial from the inhabitants of Poplar, complaining of the inconvenience of the cattle not being allowed to be driven through the streets not very long ago?—Yes; that was with regard to the cattle landed on the wharves.

43. Do you mean, in your opinion, that no inconvenience arises from the regulation, to apply also to the cattle landed upon the wharves?—No inconvenience has arisen there, and I should have excepted that, but that depends upon another clause of the Act: in truth, does not depend upon the regulations. The inconvenience arises when cattle arrive at the wharves on Sunday; but that inconvenience is caused by a provision in the Act which takes the matter in truth out of my control. This is the provision: By the 19th section of the Metropolitan Market Act, the section following that which I referred to before, it is enacted, "Such orders, rules, and regulations shall not extend to prevent cattle imported into London by sea from being driven to their lairs or fields used as lairs, on any Sunday throughout the year; provided that such cattle shall not be so driven by or along any streets, roads, ways, or places within the limits herein before mentioned, between the hours of ten and five o'clock on that day, nor without a certificate from the veterinary surgeon appointed to inspect such cattle, that it is necessary for the condition and health of such cattle that they should be so driven to their lairs or fields as aforesaid." That section deprives me of any power. I have had representations made to me upon the subject, and my answer has always been, "I have not the power to authorise cattle to be driven during those hours, namely, between ten and five o'clock on Sundays, nor without a certificate from a veterinary surgeon, stating that it is necessary that they should be so removed. I believe the complaints have been confined to that matter. It causes a great inconvenience. Numbers of cattle are landed upon the wharves, and the people interested in them have not made, as perhaps they might have done, any sheds or other conveniences for keeping them there, so that these animals brought by sea, suffering a good deal, sometimes in bad weather, are kept upon the wharf a long while. Supposing they land a little before 10 o'clock, so as not to be able to be inspected properly before 10 o'clock, they must be kept there from 10 till five o'clock without the possibility of any relaxation of the law, which enacts that they shall not be driven through the streets between those hours.

44. Lord *Eustace Cecil.*] Has there been any perceptible difference in the obstructions of the streets since the passing of the Cattle Plague Act, that is to say, during the last fortnight or three weeks?—Yes; I asked that question the other day of the superintendents, and they told me that there had been a considerable difference; in fact, the numbers have been so very much reduced (I understand they have been reduced from about 6,000 in the corresponding period of last year to 2,000) as to cause, of course, a very considerable reduction of the inconvenience, whatever it is.

45. *Chairman.*] Where are these wharves situated where the cattle are principally landed?—Chiefly near St. Katharine's Docks and the wharves in that immediate neighbourhood; just on the verge of the City and the metropolitan police district, so that they are driven up into Wapping, where there are very narrow streets. That is a very inconvenient part of the town for the cattle to be driven through to the lairs. There are specific routes for them to be driven along, when they can pass; but the great evil is their being restricted from passing at all during those hours on Sunday, namely, between 10 and five o'clock.

46. Are any of those cattle landed on the south side of the Thames?—I believe very rarely; I am not aware of any landing place there.

47. If they were landed there, they would be very distant from Smithfield, would they not?—They all go to Islington now, to the Metropolitan Cattle Market.

48. The new market which has replaced Smithfield?—Yes, it has superseded Smithfield.

49. Lord *Eustace Cecil.*] If there were a dead meat market, would it in your opinion very considerably relieve the traffic of the streets?—Very greatly; there would be an increase in the number of carts carrying the meat, but they are more manageable than cattle which are very troublesome and dangerous.

50. *Chairman.*] Is it your opinion that other traffic besides the cattle traffic must depend greatly, even in the City of London, upon the regulations made for the traffic in the metropolitan police district without the City?—I think a glance at the map which I have laid before the Committee will show at once the futility either for the interests of the City itself, or for the surrounding metropolis, of making laws which are confined to the City only. Take such points of contact between the City and the metropolitan district, as for instance, Temple Bar. If you have any regulations, whatever they may be, enforced on the City side of Temple Bar, that is, on the east side, if there is not some corresponding power or regulation upon the Strand side of Temple Bar, it must evidently lead to a very inefficient operation at least, and very possibly to a conflict of authorities; because, if the City authorities made a regulation that interfered with the traffic in the Strand, we might be driven to make some other regulation to relieve ourselves. Take another point close to that, in Chancery-lane, which is a very narrow street, as we all know. The boundary of the City of London extends about 40 or 50 yards or not quite so much up Chancery-lane, and then the metropolitan police district commences. Any regulations which were in force

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in one part of Chancery-lane and not in force in the rest, would obviously lead to inefficiency even in the City of London, and cause obstructions and great inconvenience outside. Take another point, Holborn; about two-thirds of the way along Holborn towards the east the City of London begins; there is no visible boundary or barrier. You might have different regulations there, and different law would be in force above and below the boundary. Take London Bridge again, where there is one of the greatest lines of traffic; if you have regulations in force on the City side, and on the bridge itself, without any corresponding regulations or power to make them at the other end of the bridge, that is the Southwark end of the bridge, it is obvious what inconvenience must arise. The same would apply to Blackfriars and Southwark Bridges, as the bridges there divide the City and the metropolitan district. Take Whitechapel likewise, near Aldgate; there the City ends, and the boundaries of the rest of the metropolis begin. It is obvious how exceedingly inconvenient it would be, and how necessarily inefficient I should say the regulations must be, if they were only to be enforced within the local boundaries of so small a district surrounded with such a very great part of the metropolis, under what I may call precisely similar circumstances.

51. So that, as in the case of the cattle, other traffic might be relieved within the City by regulations made without the City; but if the traffic was only properly regulated within the City, it would scarcely affect the convenience of the whole of the metropolis?—I think it would only do so in a very small degree. If there had been regulations, such as it was supposed might have been carried out or made under the Act passed in 1863, or such as those which apparently are intended by this City Traffic Act which is now before the Committee, I think a great many very harassing bye-laws might be made which would be exceedingly troublesome, not affecting only the City and those persons who may be supposed to be under the City authorities, that is, persons residing within the City, but affecting the whole metropolis, because we have all of us at times necessarily to go into the City, or pass through the City, so that they must affect the whole of the metropolis.

52. Mr. Alderman *Lawrence.*] I think you stated that the City had made no regulations with respect to the passage of cattle?—I understood they have not; I believe not.

53. I presume the regulations made for the districts outside the City would prevent any cattle coming into the City between the hours of ten and seven o'clock, there being no means of cattle getting to the City except through the metropolitan district, would they not?—They would.

54. So that the regulations made for the out-districts would, in fact, be the regulations as to the time at which cattle could pass through the City?—No. I beg your pardon; because they may pass through the City and come out the other side.

55. How could they get into the City?—They would come into the City, say at 10 o'clock, and take an hour or so in passing through the City, and come out at the other side at 11 o'clock. So, likewise, when they are coming to market, they enter the City, say at 10 o'clock, and come up to the extreme boundary at the north after that hour, so that then the police are in difficulty; they have not legal power to stop them, and therefore they must let them go on, and the evil to the other traffic is caused, and the only remedy, such as it is, is to punish the parties afterwards.

56. But they must be allowed to enter the City just at the hour of 10 by the metropolitan police in order for that to arise?—At any other hour it would still be the case if any time were taken, leaving them an interval before 10 o'clock less than that which would enable them to pass through the City.

57. Is there any route from one end of the City to another which would take an hour to pass along?—I should think so, considering the crowded state of the streets. But this would apply to a great deal less than an hour. Supposing they were to come into the district a quarter of an hour before, they would get into the metropolitan police district before the prohibited hour, but they would not get through it; it will take a considerable time to pass through the district. For instance, supposing cattle are allowed to come in at Temple Bar at 10 o'clock out of the City, and have to walk to Kensington, which would take some time in the crowded state of the streets, especially if they are obstinate animals, it would take much more than an hour, so that they are committing a breach of the law all the time they go through the district. They come within the district just at the time prohibited, and pass along it for an hour and a-half, committing a breach of the regulations at every step.

58. For which the owners may be summoned afterwards?—Yes, the owners may be summoned afterwards; but then the evil is caused.

59. Has this evil to which you allude often occurred?—Very often. I have often complained of it.

60. *Chairman.*] Have you examined the Bill that is referred to this Committee?—I have referred to it now, and also to the bye-laws that were made under the Act of last Session.

61. The Act of 1863 you mean?—Yes; the bye-laws made under that Act are very few indeed, and I am not aware that they produce any effect. I do not know that they need be produced by me; they are only three in number.

62. You have not found that they have produced any effect out of the City?—None whatever.

63. Mr. *Kekewich.*] Those bye-laws were made by the Court of Aldermen, were they not, under the Act of 1863?—I think they were made by the Court of Aldermen exclusively. I was only doubting whether they were made by the Commissioner of Police, and whether he had any power in the matter. But the Act says, "it shall be lawful for the Court to make from time to time such bye-laws," and so on.

64. They have to be approved of by one of Her Majesty's principal Secretaries of State, have they not?—Yes; there were a number of regulations made which were not approved.

65. Mr. *Gathorne Hardy.*] There does not seem to be anything requiring the sanction of the Secretary of State in the Act of 1863, is there?—Yes, there is in the 8th section, and that is proposed to be required by this Bill.

66. *Chairman.*] Those regulations you speak of were submitted to the Secretary of State, were they?—Numerous regulations were submitted, but the Secretary of State conceived that they were either not proper or else not authorised by the

the law, and he sanctioned, I believe, only these three which are here, and which do not seem to be very important.

67. The proposed regulations came under the consideration of the Home Office, and certain of them were sanctioned and others were not sanctioned; is that so?—Yes, three only have been sanctioned, and the rest were refused. I have referred to this Bill, and I may state that there are several clauses in it, first of all, which seem to be unnecessary, for they are in the existing Act, 2 & 3 Vict. c. 94, such, for instance, as that relating to sliding in the streets for one, and there are others which, with all submission, I may say, appear to me to be very unreasonable. I do not know whether I should make these observations, but I look at it, not as affecting the City only, because that I should have nothing to say upon, but as affecting the traffic going from the metropolitan district into the City or out of the City into the metropolitan district; and besides that, we are all subject to these regulations when we go into the City.

68. If the Secretary of State under that Act had had the power of making regulations which should apply to the whole metropolitan district, do you think that a much greater benefit would have been found by the public from that general application of regulations?—Unquestionably. I do not believe, as far as I know, that the regulations proposed by the City would have been made by the Secretary of State under any power, general or special. But there are regulations which, I think, would have been made, and in my humble opinion ought to have been made, if there had been a general power to apply them.

69. Notwithstanding the regulations that have been made for the City, and the regulations which you have had authority to make for the regulation of the traffic in the metropolitan district, do you think that now a very considerable benefit to the public would arise by giving to the Secretary of State the power of making general regulations for the whole of the metropolis?—Yes. I think there are certain points upon which it would be very beneficial to have general regulations; but I believe at the same time that the power and effect of any regulations are very much over-rated. That is my general impression. I think there are some inherent difficulties arising, for instance, from the narrowness of the streets of London, and other circumstances which cannot be guarded against by any regulation. I think, however, that there are points upon which regulations extending over the whole of the metropolis might be made with certain advantage.

70. With regard to some portions of the traffic that takes place in this metropolis, such as the slopping of the streets, the supply of coals to private establishments, and the removal of ashes and dirt from the different houses by the dust carts, in your opinion could not a regulation be made as to the hours at which those operations might be performed which would tend very much to facilitate the traffic?—I think so, decidedly; and I think there would be no hardship to anybody in making regulations even for some classes of traffic, or vehicles. I see one of these clauses on page 3 of this proposed Bill gives the power of regulating the manner, or rather "determining the period of the day during which coals and beer may be delivered." I should certainly not restrict that to beer. I should extend it to all liquors of any kind in casks. The obstruction may be just as bad with whisky, or wine, as beer; and this provision, as it stands now, might even prevent a pot of beer being carried in; there is no limit to the quantity; it says, "for determining the period of the day during which coals and beer may be delivered." That is very loosely drawn, it might evidently cause great hardship and it would not meet the whole of the difficulties. All kinds of liquors, and certain other goods also, might be equally well prohibited or restricted to certain hours. Further, all scavengering work ought to be restricted, and might without any hardship to the public or to any person be restricted to certain hours; I mean the common scavengering and cleaning and sweeping the streets. There is no greater cause of obstruction than that; you have a heavy cart standing, with a great quantity of mud swept up, taking of itself a considerable part of the street, and this mud is shovelled in, bespattering everybody as they pass. I cannot conceive anything much more inconvenient, one might almost say barbarous, than such a mode of cleansing the streets. It might be done at an earlier hour, say not after nine o'clock in the morning; make the people get up earlier and do it. I believe it is done so in Paris to a great extent, if not exclusively. I know they are very much earlier at work there, and it is done earlier. I think with regard to watering carts perhaps a little inconvenience might arise from such a regulation, but I think even the watering of the streets might be restricted to a certain hour. I think if the streets were well watered up to nine or ten o'clock, and you began again to water them at any hour when the traffic was considerably reduced, it would relieve the streets of a great cause of obstruction. A watering cart moving slowly along the street, and turning round and going short distances only, causes great obstruction. There are several classes of traffic even more than those which occur to me at the moment which might be restricted to certain hours.

71. In the west end of the town of course you find that the traffic at certain periods of the year is enormously increased; do you think that during a certain period of the year, the season for instance, other regulations than those which should prevail during the remainder of the year might be made with advantage?—Yes, there are two ways in which, I think, special regulations might be enforced at such times. Although it is claiming a large power to speak of enforcing the law or not, yet, I think, a wide discretion should be given not to enforce the law in every case. I think if the police were empowered, in certain times, when the town is comparatively empty, not to enforce the law, that would be a better mode than giving even to the Secretary of State power to make regulations for that purpose. I think it is very desirable to enact as much as possible by law rather than to leave it to regulations, except as regards occasions which are temporary, such as public occasions.

72. For that you have full power at present, have you not?—I think there are quite sufficient powers for those purposes.

73. For those special occasions you referred to?—I think there is quite sufficient power. I find no inconvenience, practically. I think the powers that may be exercised by the Commissioner of Police in the first instance, in making

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regulations which are afterwards carried out by the police, is sufficient.

74. If you give great discretionary powers, do you not think there ought to be means taken that the public shall be informed of the regulations that are made in order that the public shall not be kept in ignorance of what those changes in the regulations are?—Yes; but when I speak of discretionary power I mean rather in not acting than in acting. Certainly if you are to bring any new regulation into force of a permanent character, there ought to be full notice given to the public that objections may be made to it, and that the public may prepare and make their arrangements accordingly. But I do not think the same evil would arise if it were only that the law was not strictly enforced, because I think, with regard to many of those police laws which go into detail and affect small matters, if they were enforced in every case to which they are applicable, there would be extreme hardship.

75. Mr. *Gathorne Hardy.*] Have you considered how a measure should be framed, and who should have the authority under that measure for the purpose of making and enforcing those regulations which you suggest?—I should in a great number of the cases which are to be dealt with by this Bill by regulation make enactments by Act of Parliament. Then where regulations are to be made I think the best power for making them would be, within the metropolitan district, the Commissioner of Police, subject to the authority of the Secretary of State, and within the City of London, the Commissioner of Police, subject to the authority or approval of the Court of Aldermen (as everything is there, I believe, done subject to the approval of that Court), and finally to the approval of the Secretary of State. Then in the case of the two authorities not making corresponding laws where there was sufficient reason for it, I should propose that the Secretary of State should have the power then to make the regulations himself.

76. And that he should be able to regulate those by-laws made within the City, and without the City, so as to make them work uniformly?—I think, as the Secretary of State is the highest authority in this country for such purposes, with the greater consideration which he would always give, and with the advice he could always have, he is the proper authority, and the responsibility should devolve upon him, and the power should be placed in his hands.

77. You think that certain regulations may be so strictly defined, as to be laid down by absolute legislation at once?—I think so.

78. Beyond that, is it that you adopt the state of things which exists as between the City and the metropolitan districts as a necessity, or is it that you think it the best system that could be adopted, that there should be two authorities acting in the matter of the regulation of the traffic?—I think it is a great evil having the two authorities; I think the public suffer very much from it, but I cannot remove the evil; and inasmuch as the object is not now that of making a uniform police, which I think would be by far the best thing for the public, if you must keep up separate jurisdictions, I think those are the two authorities by which the power should be exercised.

79. You would call in first of all the Secretary of State to sanction any regulation made for the City by the Corporation, and you would subsequently call him in as the absolute master of the position if they declined to do what he considered was required?—Yes; in such a case as that of an absolute failure to make any regulations with regard to the cattle traffic, I should, if I had been the Secretary of State, have made them myself.

80. With that view, would it not be best that the Secretary of State, without having to do so invidious an act as absolutely to overrule what is done by the Commissioners or by the Corporation of the City of London, should, acting under advice, make a uniform system of regulations for the traffic of the whole of the metropolis?—I think that would be much the best; but I find that is always the case that there is a power in the City of London to defeat whatever is proposed irrespective of them. I am only looking to what is most likely to be effected, not to what is best.

81. Putting it to you as a question of what you think is most likely to be effective, would it not be better, instead of having a control over the regulations made by two disagreeing authorities vested in the Secretary of State, to give him the absolute power at once of making the regulations?—I think it would be far better to do so; there is also an evil in having the regulations made by the Court of Aldermen, as it is called in the Bill; I think that involves a very great evil in principle, namely, that the persons who make the regulations have the power also to enforce them, because the Aldermen in a body, as the Court of Aldermen, make the regulations, and then in the capacity of magistrates they have the duty of deciding upon them afterwards; I do not think that that is a sound principle.

82. It was stated the other day that the City was in an exceptional position on account of the peculiarity of its dense population, and also the narrow streets. Are there parts of the metropolitan district which are in the same position in those respects?—Quite so. I think there is no greater mistake than to suppose that there is some peculiarity in the City of London which makes it distinct from the rest of the metropolis.

83. Will you call the attention of the Committee to those parts of the metropolis which are in similar circumstances to the City?—I would take any one of those places I have already mentioned as illustrations. For instance, the Strand on one side of Temple Bar, and Fleet-street on the other; London Bridge on one side and the other, that is a good opportunity for comparison; and the same at Blackfriars and Southwark Bridges. Then there is Aldgate and Whitechapel, and Holborn. Then as to the places which are peculiar within the rest of the metropolis, but not in the City. I will take, for instance, Charing Cross, where the tide of traffic comes sweeping down from the Strand, from St. Martin's-lane, from Cockspur-street, and likewise returning in the same directions. In the neighbourhood of the Houses of Parliament, again, where many gentlemen, I believe, have great difficulty in saving their lives as they cross the end of Bridge Street. Then there is Hyde Park Corner, where there is more difficulty, I should say, than at any spot in the City, in consequence of the number of lines of traffic bearing upon one point. There are carriages going at a rapid pace, and heavy carriages likewise. There are carriages going along Piccadilly, and down to Knightsbridge,

Knightsbridge, and returning. There are several lines of traffic meeting there. You have carriages coming up Grosvenor-place to turn down Piccadilly, or to turn to Knightsbridge, or to pass into the Park, or to turn and get into Constitution-hill; and there are likewise carriages coming in the reverse directions. Then take Albert Gate, where you have a great traffic along a very narrow street, and likewise into the Park and out of it. Take also parts of Oxford-street; take the Regent Circus, where there are several lines of traffic. It is that which makes the great difficulty, because if you have only continuous lines of traffic as you have in most parts of the City, it is slow but that is all. That cannot be helped. I do not think that the wit of man can prevent, by any amount of regulation, the slowness arising where you have a great traffic along a narrow line; all you can do is to prevent absolute obstruction. The great difficulty is where you have a number of lines of traffic coming in different directions, and at different rates of speed.

84. Is it not the case also that the City has its population mainly in the day time?—It may be said to be wholly so. If you pass through the City of London after eight or nine o'clock in the evening, it is almost like a city of the dead.

85. I think it is stated that the City receives 500,000 or 600,000 people, either on foot or in carriages, in the course of the day?—I have heard so; it is very likely.

86. They must all go in through your district, must they not; they must pass through the districts of which you have the management?—Yes, they must pass in in that way, and out of it again. I have often seen it stated as a reason for there being particular laws within the City, that this number of people are there, without its being remembered that they come out of the surrounding metropolis and go back into it again.

87. For the advantage of the City itself, in your judgment, looking at it quite irrespective of the existence of particular jurisdictions, you think that it would be for the advantage of the City, as well as for the whole metropolis, that the management should be one, with respect to the whole of the traffic, including the City traffic?—Quite so. I am sure it will be a failure if it is attempted to make regulations within the City precincts only.

88. Mr. *Baring.*] Can you tell the Committee whether the number of accidents, from people being run over, has increased or diminished of late years?—I have returns here which show it. The numbers have increased. These returns were made two or three months ago, but I think they would be sufficient for the Committee. I have taken the returns for the total number. This is a return of the number of persons killed or injured by vehicles in the streets, during the year 1865, and the first two months of 1866. This does not include the City; I have no means of ascertaining what happens there. The number of persons run over and killed is 140, in the year 1865, and 23 in the two months of 1866. The number of persons maimed or injured is 1,707, in the year 1865, and in the present year, 231.

89. *Chairman.*] That is in the two months that have elapsed in the present year?—Yes.

90. Mr. Alderman *Lawrence.*] There were 231 persons maimed?—No, much more than that; there were 1,707 persons maimed in last year. I will put in the return, if the Committee wish it, just as it is; it gives the numbers in a little more detail than I have mentioned them, stating those that were killed by horses or vehicles, driven or led, and the number of cases in which persons were injured by horses or vehicles, driven or led; it is a return in some detail. I have had these returns made out from time to time.

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91. Mr. *Baring.*] That return is for the whole of the metropolitan police district?—Yes; for the whole district.

92. But the accidents were mainly in the thickly-peopled part of the district, were they not?—They were; the accidents are almost exclusively in the crowded parts, in what we may call the town, or the metropolis proper. On referring to the return there appear to be numbers killed and injured in other places also, in the suburban and less crowded districts. The light, fast vehicles cause several accidents in the roads.

93. Have you any suggestion to make respecting any possibility of diminishing the number of those accidents?—It is a very difficult matter; as to regulating the general rate of driving through the streets, I think that is an impossibility. People will not submit to that, and besides that, what is reasonable in one place, would be unreasonable in another. What is reasonable in Portland-place, for instance, would be very unreasonable in the Strand, so that it would be very difficult to make any general rule; but a suggestion has been made to me by one of the secretaries of a railway company, which it occurs to me might be brought into use in some way. He brought me his suggestion a few days ago, and I will lay it before the Committee. It seems a little fanciful, but I think it may be made available possibly, with some modification. He proposed that there should be arms falling and rising, something similar to what you see on a railway, indicating caution or danger. The signal for caution was to mean that the drivers were to proceed slowly; of course, that signal must be put up, if it is necessary, in consequence of accidents, to drive slowly, or for any other special emergency; as for instance, at Bridge-street, during the sitting of Parliament. These arms should be up, if any accidents have happened. If a horse fell down, or there were any obstruction, there should be a certain signal to indicate that. This gentleman came to me the other day, and I talked with him about it, but I have not given the matter much consideration. At first sight, it certainly seems to me that it might be made in some measure available. In addition to that suggestion, it has also been suggested, that crossings should be more protected than they are at present; that is to say, that there should be a power, whether by a notice given by signal, or in some other way, that cabs and carriages should slacken their pace somewhat, and if necessary, stop altogether when required to do so, in order to allow people to cross the streets.

94. Do you think that the majority of accidents take place at crossings?—A great many take place at crossings, and people, knowing that crossings are nearly as bad as other parts of the street, go into parts of streets where there are no crossings, feeling that the crossings are not much better protected. I may also mention that there have been various proposals in the newspapers, and I believe there is something of the sort in this City Bill for bridges and underground ways, to enable people to cross streets. I have never been able

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to understand how those bridges could be put up in crowded streets, take Charing Cross for example; you must begin a long way off the crossings, in order to give the slope that would be necessary, and you must run through people's houses with the abutments of your bridge, or you would have to build a perpendicular bridge, which would be very inconvenient to go up, because if you raised it directly from the kerb of the street, you must run it up perpendicularly, or else you encroach upon the street, and lessen the street by the width of that abutment, diminishing the space through which carriages could pass.

95. Do you think it would occasion very serious inconvenience to passengers in the streets, and to carriages, if for a short time, at intervals, the traffic was stopped, to allow people to cross over at the different crossings?—No, I do not think it would. One assumes the authority for doing so at present, and it is in fact done at certain places; for instance, at the crossing near Charing Cross, but more especially at Hyde Park Corner and Albert Gate, and the other end of Oxford Street, where people are going into the Park. Great numbers of women and children pass at those places, and there are policemen there with instructions to stop the carriages according to the number of people waiting, to enable them to cross; and in the more crowded times of the year there are mounted men for the purpose of seeing that that is done. The coachmen all obey those directions; perhaps the authority might be questioned, but it never has been as yet, and it is a great convenience I am sure to the public, as well as guarding against many accidents.

96. Your attention is directed to that matter now?—My attention has been largely directed to it. I have a return here as to the number of places in which special directions of that kind have been given. I will refer to a few of them. For instance, Charing Cross, the corner of Bridge-street, and Parliament-street, and in another part of London, in the narrow part of Park-lane, in Old and New Bond-street, in Regent-street at the Circus, in Oxford-street, and the crossing of Holborn from King-street, and at Middle Row, and Chancery lane, and Temple Bar, and so on. There are a number of places which I have on this paper, where special arrangements of the police have been made for the purpose, and where an additional number of police are kept for the purpose, and those regulations are being carried out. Every now and then the traffic is stopped, and in addition to that, policemen cross with women and children, when they see that the women are frightened and are running about in such a way as to be likely to get into danger. This paper is filled with places where those special arrangements are made. The Committee will see that there is a large number of them.

97. Mr. Alderman *Lawrence.*] I think you have stated that it would be perfectly futile to make any regulations for the City of London that were not made for the whole of the metropolis?—I think so.

98. Do you think it necessary that regulations should be made to regulate the traffic of the metropolis?—Yes, some regulations, but I have already said I think only to a limited extent, for the effect of any regulations is, I think, very much overrated.

99. I think you stated that the present City Bye Laws had produced no effect outside the boundaries of the City whatever?—I have inquired, and I have been told that no effect had been observed. Of course you are aware what those regulations are.

100. I may infer from that that there has been no obstruction outside the City caused by those regulations within it?—No, I should not think they have produced any effect anywhere, as far as I am aware.

101. If I understand you correctly, you do not consider that there is any peculiarity or speciality connected with the City of London as to the narrowness of its streets and the largeness of its traffic and its limited space, making it necessary that special regulations should be made for the City different from those made for the surrounding districts?—I think not. I think if you look into it you will find that where it is sought to remove what I may call the inherent evils of narrow streets and great traffic, the regulations might be very vexatious, but I think they would produce very little effect; that is my belief.

102. When you say "the surrounding districts," do you mean by that the whole metropolitan area under the management of the metropolitan police?—I mean, what one may call the metropolis.

103. Do you mean the metropolis, as defined by the area under the Metropolitan Board of Works?—I do not mean even so far as that, because parts of that area are rural.

104. How would you define it then?—According to a certain district. I would at this moment say within some three miles round Charing Cross, but I must say, as to the exact limit, I have not considered it; that would be a question to be decided upon the map; one must look at the map first.

105. If regulations were made, you consider that they should apply to a district within three miles from Charing Cross?—No, I do not say that they would be applicable to any certain limit. I should look at the map and consider the locality.

106. If I understand you correctly, different regulations would be required in different portions of the metropolitan district under the management of the metropolitan police?—Yes, I think so.

107. And you think that regulations, if made, should be limited to a certain area?—There are certain places where they would be uncalled for, and therefore vexatious. I think it is a matter of great importance that the police should not interfere where there is not a paramount necessity for their doing so; nobody likes the interference of the police, and I think it is very objectionable where it is uncalled for.

108. If I understand you correctly, you do not consider that any special regulations are necessary for London Bridge, Southwark Bridge, and Blackfriars Bridge, other than those which are necessary for all the other bridges of the metropolis?—That question depends upon the special circumstances relating to the traffic on bridges. Bridges may be all regulated without inconvenience to anybody. A bridge is for nothing but passing over, so that there would be no difficulty whatever in carrying out regulations for London Bridge, merely requiring that there should be two certain lines, one for slow and the other for quick traffic; nobody wants to stop upon a bridge; there are no streets which turn into or out of it from one end to the other. I will take Westminster Bridge as an example; the interference

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of the police there is very trifling, and in my judgment properly so, because it is uncalled for. You might perhaps make a little more apparent regularity in the traffic if you forced the carriages into lines as is done upon London Bridge, and very properly there, on account of the narrowness of the bridge, but upon Westminster Bridge such a regulation would be uncalled for, and therefore I think improper.

109. If I understand you rightly, in your opinion regulations which are necessary at London Bridge are uncalled for at Westminster Bridge?—Just so; those regulations however do not require any special law.

110. Was not a special law passed in order to regulate the traffic of Westminster Bridge, in consequence of the Metropolitan Police not having the power to regulate it until that law was passed?—It is not exactly so. The law with regard to Westminster Bridge was passed because the lines of what they call tramways were placed in such a position that I declined to enforce the regulations that were necessary for carrying on the traffic in that way. That course which I took was considered to be a proper one. The facts were these: the Commissioner of Public Works brought in a Bill enabling him to make regulations with respect to the traffic there. Those regulations I declined to enforce. I thought they were unnecessary. The result was that he took up the tramways and put them in where they ought always to have been, namely, at the sides of the bridge, and there is now no difficulty in carrying on the traffic.

111. Was not it found that the regulation in force with respect to the traffic on London Bridge, by which the heavy traffic was confined to the sides, and the light traffic to the centre, was so advantageous that it was necessary or expedient to make the same regulation for Westminster Bridge?—I think not. That regulation is not made, and I think it would be improper to make it.

112. If I understand you correctly, when Westminster Bridge was first opened, the tramways for heavy traffic were placed in the centre of the bridge?—Yes.

113. And then, in consequence of its having been seen how easily the traffic passed over London Bridge upon the opposite system, the tramways were taken up and placed at the sides of the bridge?—That is not quite a correct statement. Before Westminster Bridge was opened, I remonstrated at the tramways being placed in the middle of the bridge. The case of London Bridge never entered into my head. I pointed out that the heavy carriages and carts coming up Bridge-street would naturally keep to the sides of the road, and the light traffic would cut out into the middle, as it usually does. But the tramways, if placed in the centre of the bridge, would prevent that, and if the heavy traffic was to pass on to them in the centre of the bridge, it would have to cross the light traffic, and thereby cause obstruction. It was on those grounds that I declined to enforce any regulation which might have been made. In fact, I had power, I believe, to make a regulation myself, but I declined to make a regulation to compel the heavy traffic to go into the centre of the bridge. I had a conversation with certain authorities upon the subject at that time. I said, I do not think the tramways are required at all, because, in the only places where they are wanted, you do not use them. If you had a tramway on the slopes of the bridge, that would assist a heavy vehicle in getting up the slope but then, in going down the slope, the carriage runs upon the horse, so that it would be very inconvenient, and indeed dangerous, and in fact the tramways are not put upon the slopes. In the centre, on the crown of the bridge, I do not think they are required. On good pavement heavy traffic passes easily enough, and I said, "If you have the tramways, have them at the sides of the bridge, where the heavy traffic will naturally go on to them. That is done now without any special regulations.

114. You said that you thought that regulations might be made as to the time when coals and beer should be delivered, and when scavengering and other things should be done throughout the metropolis?—Yes.

115. Are you aware that in the City of London the hours are regulated at which scavengering is performed in the main streets; it commences at two o'clock in the morning, and it is done before the main traffic comes into the City at all?—I am not aware of that; but the other regulations which I mentioned are not enforced, I believe.

116. The regulation as to scavengering is enforced?—I was not aware of that; it is a very proper regulation as it seems to me.

117. Are you aware that there is a special Act for Southwark as to the delivery of casks of beer in that district, which limits the hours in which the delivery may take place?—I am not aware of that; are you sure that there is such an Act?

118. It is an old Act?—It is not in force.

119. You alluded to certain streets in which you stated that there was a great traffic outside the City. Do you know of any street whatever outside the City that has the amount of traffic that the Poultry has?—I should think there were several streets that have that traffic; the Poultry is a very narrow street, and therefore there is a very great and crowded traffic in it, and so there is in the Strand; and so there is at Charing Cross, and so there is at the end of Piccadilly towards Leicester Square, and so there is in places near Park-lane, and in Park-lane itself. That, I think, is an inherent difficulty which no regulation can get over. I think it would be intolerable, if I may say so, by any regulation to forbid a carriage going up a street except upon a particular occasion.

120. You think then that to regulate any hour at which any carriage of any kind may pass through any street would be unbearable?—I really am not prepared to answer the question in that form.

121. You think that any regulation for regulating the hours of carriages of any kind through the streets, would be unbearable and unwise?—I think I should come very much to that conclusion, but really I do not profess quite to comprehend what the effect of all that your question implies would be; but I should state more specifically that such a regulation as I find is proposed in this Bill would be, in my opinion, very unreasonable. For instance, there is a provision "for regulating the several routes to be followed, and the particular streets or portions of streets to be used by all or any of the omnibuses, metropolitan stage carriages, vans, and other carriages licensed for the conveyance of passengers at separate fares." I think that would be a very unreasonable regulation in my humble judgment. It would prohibit the omnibuses using the streets. Of course an omnibus means the passengers in the omnibus, and

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and I know that by a previous regulation omnibuses were forbidden to pass along Cheapside, in order that the traffic might be forced up Cannon Street, but the people in omnibuses wanted to go to Cheapside, and I think it was a very arbitrary act to force them either to take a cab or to walk there.

122. Are you aware that under the present Act of Parliament the Corporation have the power, and have exercised the power of marking the routes of omnibuses according to the Act which is in force now, and which, as you have stated, has caused no injurious effect outside the City?—I suppose you mean the first Act.

123. I refer to the Act of 1863?—It specifies certain omnibuses only.

124. Omnibuses coming from the West End to London Bridge, and *vice versâ*?—Yes; what the inconvenience to the people in the City may be as passengers I do not know. I spoke of the inconvenience as regards the traffic outside the City, and the inconvenience to the passengers in no way affects the traffic outside. The regulation now in force is, "Every omnibus, metropolitan stage carriage, van, or other carriage, licensed for the conveyance of passengers at separate fares, passing eastwards through St. Paul's Churchyard, and proceeding to, or whose destination, as stated on such vehicle, or in its license, shall be London Bridge, or to any place over London Bridge, shall, when it reaches the south-east corner of St. Paul's Cathedral, pass down Cannon-street, and thence over London Bridge." I am not able to judge, and I do not know at all what the inconvenience to passengers may be; that does not affect the traffic coming out of the rest of the metropolis. But it would be very inconvenient, for instance, if a regulation was made that no omnibus should pass up Fleet-street, which might be done under this proposed Bill. In that case the omnibuses would all have to stop at Temple Bar, and either to turn round there, or to stand still; that would be exceedingly inconvenient.

125. I think you mentioned certain places, such as Charing Cross, the Houses of Parliament, and Hyde Park Corner, at which a large amount of traffic converges; do you not consider that there is a far larger amount of traffic converging at the point opposite the Mansion House than at any of the places you mentioned?—I should think not, especially of the different sorts of traffic; and I imagine that anybody who looked at the state of the streets would be of that opinion. I should think, if you took Hyde Park Corner during what is called the London Season, from four or five o'clock in the afternoon until seven or eight, you would find more carriages there, and carriages which are far more difficult to manage, than there are converging at the Bank. I never made the comparison actually, but that is my belief: and that is especially so, as the traffic in the city would be all going slow, whereas the difficulty in the other places I have mentioned is, that some carriages go, or want to go, fast, and others slow.

126. You have alluded to Aldgate and Whitechapel, and the Strand; do you think that those streets can be compared to King William-street, Gracechurch-street, Fenchurch-street, Cornhill, and other streets of the City?—Inasmuch as the carriages can only get to those places through those streets that I spoke of, the traffic must be the same. A very small quantity of the traffic originates in the City; the carriages all pass into and out of it, I believe, with very few exceptions.

127. With regard to the accidents occurring in the streets at crossings, you do not see the feasibility or the possibility of any way of remedying that difficulty by making foot bridges across the roads?—That is rather a question of engineering. I gave my opinion upon it. Looking at the difficulties, when you consider the width of the pavement, and some of the consequences necessarily resulting from it, I do not think much of the suggestion, but it maybe practicable for all that.

128. You rather consider it an engineering question than one for you?—Yes, quite so.

129. I think you stated that regulations as to the fastness of driving or other things that would be very unreasonable in such a wide street as Portland-place, might be very reasonable in a more confined and restricted street?—Not exactly in more confined or restricted streets, but at particular points. Take, for instance, Charing Cross. There are three different lines of carriages coming down there on the slope, where they come naturally quicker than on the level. They come down the Strand, down St. Martin's-lane, and down Cockspur-street, in two or three different lines from those directions, and they run rapidly down to Charing Cross. There, I think, it might be reasonable, if it could be done without great inconvenience, to have regulations as to the speed, but it is a very difficult matter.

130. If I understand you rightly, you consider that if such regulations were made, the same regulations would not be required for such streets as the Whitechapel-road, the Commercial-road, the Clapham-road, the Brixton-road, and the Kingsland-road, after you leave the Old Street-road, as you would require in Holborn, or in Oxford-street, or Regent-street?—Yes; I think there are not nearly so many carriages in the roads, and the roads themselves are wider.

131. Therefore you think you would not require the same regulations and restrictions?—Certainly not.

132. So that the regulations and restrictions depend most materially upon the amount of traffic and the wideness of the streets the traffic has to go through?—I do not think that is quite the whole question.

133. There are various local circumstances to be considered in respect to the regulation of the traffic in any district of London, are there not?—I do not know that I should assent to that.

134. There are exceptional circumstances, are there not?—It is quite obvious that in a wide road the same regulations may not be called for as in streets where there are many carriages.

135. Then the same regulations would not be required to be enforced so strictly throughout the whole of the area within three miles from Charing Cross, as they might be in the area within a mile from Charing Cross?—I have said already that before I fix the distance I should look at the map. There are certain limits within which I think it is obvious that regulations are required, and others where they are not. For instance, with regard to the distribution of police. There are a far greater number of police within a certain crowded district than in a more extended district. Various things, such as the habits of the people, make it necessary to increase the number of policemen in certain places. For instance, take

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one matter to which that observation is applicable to the disadvantage certainly of the metropolis compared with the City, the night traffic. The night traffic is vastly greater out of the City than it is within. The number of parties given without the City at night is far greater; and above all the crowds of carriages at the various parties that are given in the West End, and but very rarely in the City, immensely add to the difficulty of providing against obstructions. In those roads you have mentioned, the carriages are not collected together. It is not the mere locality but a variety of circumstances that make different regulations necessary.

136. Have you found difficulty in managing the traffic in the metropolitan district, through not having sufficient regulations to manage that traffic?—There may be some points upon which regulations are required, but I think they are very few. There is one that I do not notice in this Bill that I think would be important; that is the placing parcels of various kinds out on the footway whilst large vans are loading. Referring to the place nearest here, the Van Office, Charing Cross, they bring out packages on to the footway, and leave them there so as to cause obstruction, or at least great inconvenience, and the law does not deal with that. The assemblage of people known as betting men standing in the streets, is another matter that needs consideration. Some regulation might be made applicable to them, but after all it is not a very great evil.

137. If I understand you rightly, you have never felt any great inconvenience, or seen any urgent necessity, for regulations being framed for the management of the traffic under the control of the metropolitan police?—I hardly like to answer so general a question as that, but I do not think, except upon some very small points, there is any very pressing danger or necessity. I think there would arise very considerable evils if there were powers given to make regulations in any one part of London which would operate prejudicially in the adjoining part. And, I think, it would be very unreasonable not to give a similar power to the surrounding parts, because you then create a difficulty that does not exist, if things are left to the present state of the law.

138. Have you drawn up any scheme or made any suggestions to the Secretary of State that he might introduce a Bill to give further power to the Commissioner of Police for making regulations in the metropolitan district?—I have called the attention of the Secretary of State to this Bill of the City, and said that I hoped he would take measures to prevent the Bill becoming law, because I thought it would be very prejudicial unless there were further powers given to somebody as far as necessary for the surrounding metropolis, but I think that those powers in the Bill ought not to be given to anybody.

139. Presuming this Bill does not become law, would you urge upon the Secretary of State to give you further powers for the management of the traffic of the metropolis?—I act so directly under the authority of the Secretary of State that I hardly like to say what I would urge upon him. I am in frequent communication with him; sometimes it is necessary for me to originate matters, and sometimes I am called upon. But usually, with respect to matters relating to the laws, the Secretary of State considers them. I may in conversation say I think so and so is an evil, but I look upon it as my duty to execute the laws rather than to frame them.

140. I may take it generally, that you have not found great inconvenience, for want of further powers, to regulate the traffic?—Yes; I think so in a general way.

141. I think you stated that the regulation of the cattle traffic has acted admirably throughout the metropolis?—I think I did not use quite so strong a word as "admirably;" I would say beneficially.

142. Were not those regulations, or some similar regulations, urged upon you by the City authorities?—They were urged upon me by the late City Solicitor in this manner; he said, "We cannot make such regulations, because the interests in the City are so strong" (he named, I think, the cattle salesmen, and carcase butchers), "that we cannot carry regulations in the City. If you will make regulations, they will, to a great degree, answer our purpose." That, I think, was the way it was brought before me; I had two or three personal interviews with him, and he finally wrote me one or two letters.

143. The City would have had no power, of course, to make regulations in the districts in which they are now in force?—Certainly not; I said then, with regard to that matter, as I say now with regard to other matters, whatever regulations are in force in one place, ought to be in force in another, and it would be very prejudicial if they were not so. I think those regulations have not answered so well as they would otherwise have done in the metropolitan district, on account of the deficiency of regulations in the City.

144. Take the spot at the intersection of Fleet-street and Farringdon-street, and Bridge-street, Blackfriars, where the cross traffic comes in from Blackfriars-bridge going to the north, do you think there is any spot outside the City, in the metropolis, where there is any such amount of traffic, with two lines of carriages coming exactly at right angles the one to the other, as there is at that spot?—I could name two or three places; for instance, at Regent's Circus, with the cross traffic of Piccadilly; and again, the traffic of the Strand coming in at Charing Cross to Pall-mall; and again, Hyde Park Corner and Albert Gate. In mentioning these cases, I am speaking loosely as to numbers; I have not compared them actually.

145. Mr. *Miller.*] And Bridge-street, Westminster?—Yes; and there is a greater difficulty even there, from the three or four lines of traffic. And, let me say, that the difficulty is greatly increased where you have various descriptions of traffic; gentlemen's carriages in large number, and light carriages and carts going at a different pace, and omnibuses and heavy waggons, the various descriptions of traffic make a very great additional difficulty.

146. Mr. Alderman *Lawrence.*] You suggested that there might be a relaxation of some of the laws actually in force under a discretionary power; would that discretionary power be given to the policeman on duty, or to the sergeant, or the inspector, or whom would it be given to?—Whoever was at the head of the police; the Commissioner, I think.

147. Mr. *Labouchere.*] You stated just now that policemen had been found very useful at crossings where many lines of traffic meet, and you mentioned Oxford-street and Charing Cross as instances, but

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policemen are rather exceptional than otherwise, either at the Oxford-street Circus, or at Charing Cross, are they not?—No; I think you would find a policeman constantly at each of those places.

148. I come by there every day of my life, and I think, about half-a-dozen times I have seen them stop the traffic, not oftener?—Which crossing do you speak of?

149. I speak of Charing Cross, by Charles the First's statue?—I do not believe there is ever an hour of the day when there is not a policeman there.

150. There may be a policeman on his beat, but they do not stop carriages there as they do at Park-lane?—They do not stop carriages except on special occasions.

151. And at Oxford Circus is there always a policeman?—Yes; of that I am quite sure.

152. You may see occasionally an old woman in great difficulty to get across the street, but you never see a policeman do anything?—Then he is not doing what he has directions to do. I will show you, by the returns I have got, that those places are specially named as being places where regulations of the kind I have described are made.

153. Is this to be done by the policeman who is on his beat simply, or by policemen specially appointed at those places for the purpose?—In some places it is by policemen on the beat; in others, policemen are specially ordered for the purpose; for instance, up to a certain time at Charing Cross it is the policeman on the beat, but after that it is a constable, specially appointed there. I have one police constable at Charing Cross from 10 till seven, all the year round; there is a constable on his beat from 12 at noon to nine at night, allowing one on each side of Parliament-street, and so again at other places. All the details are stated in this paper. I will not answer for it that the men are invariably where they ought to be; wherever one has to deal with men, there is the possibility of their neglecting their duty; so that you may have noticed cases where the policeman is not doing what he ought to do, but I am sure he has directions to do it, and ought to do it.

154. Do you think, if the number of policemen were increased at the crossings, it would obviate the necessity of the bridges and subways, and there would not be so many accidents?—The subways and bridges seem to me not to be practicable. I do not see how they could be made. Take the Thames Tunnel, for instance; you have a difficulty in getting into it and out of it; of course the less the depth of tunnel, the less is the difficulty in getting into and out of it; but you must have some slope, and that would require your going a considerable way up the street to begin. These are rather engineering questions, as I have said; but I do not think bridges would be of much use, looking at what is done at the railway bridges, where persons have to go straight up to cross by a bridge over the line; almost everybody avoids doing so, and crosses the line instead; I have myself been stopped half-a-dozen times by policemen when attempting to cross the line instead of going over the bridge.

155. Do you consider that the accidents happen chiefly from the reckless driving in the streets by the coachmen, or from the fault of the persons themselves in the streets?—From both. No doubt there is reckless driving of carriages to a great extent, but I think it is also the case that people cross the streets most recklessly. I have very often noticed them myself, and said, "Remember the street is for carriages as well as for you." They walk in the most careless manner, as if every carriage was bound to pull up for them. I think there is very great fault in the manner of driving in the streets, and I will put in a return of the number of cases in which persons have been summoned for reckless and furious driving during a certain period; it may be of use to the Committee.

156. There is more reckless driving on the part of private coachmen than on the part of cabmen, is not there?—I do not know that I should say so. Some of the cabs, the Hansom cabs especially, drive very furiously.

157. They can pull up very quickly, can they not?—They can, but they do not often wish to do it. I have here a return of the number of summonses applied for, for furious driving.

158. *Chairman.*] By the metropolitan police?—Yes. I have not the means of ascertaining those in the City. I find the number of summonses applied for were 245.

159. Mr. *Gathorne Hardy.*] Is that in 1865?—Yes; the number of men convicted was 184, and dismissed 84; and then I see there is a description classifying the vehicles, as cabs, omnibuses, carts, and vans; but I think I have another return applying to all. It was taken from Monday, the 27th of March to the 30th April 1865. That is the crowded time of the year. The heading of this column is the number of drivers charged or summoned for furious driving in the streets or thoroughfares, and it gives the numbers. Eighty-five was the whole number summoned, 66 of whom were convicted; and the number of persons apprehended was 45, of whom 34 were convicted. The policemen apprehend when they have no means of ascertaining who the driver is; where he will not give the number, or they cannot ascertain it, and where he appears to be reckless about the matter. The fines imposed on them are very small. One is fined 3 *l.*, that is the most; nine are fined 40 *s.*, and then there were six fined 5 *s.*, and some were fined only 3 *s.*, and 2 *s.*, and 1 *s.*, and so on.

160. Mr. *Labouchere.*] Comparatively speaking, there are a greater number of policemen employed on the crossings in the City than in your jurisdiction, I think?—I am not aware of that.

161. One sees more in the City?—There are a far greater number of policemen in the City in proportion to the area.

162. I mean policemen employed particularly to regulate the traffic at the crossings?—I am not aware of it; it may be so.

163. Do you think if you employed more than you do now; in point of fact, if you put one wherever two or three main streets cross, and there is a large amount of traffic, that the number of accidents would be considerably diminished?—Yes. I am not prepared to say what proportion of the accidents is caused at crossings. A great many persons cross where there is no particular crossings; it may be as you say, but I am not prepared to say that it is.

164. Do you not consider that, if the slow traffic were excluded from the main arteries between the City and the West End, and every one driving from the City to the West End in a cab would save 10 minutes on the average; take from the Bank to Hyde Park Corner, and suppose that

that the heavy traffic were excluded from the main artery along the Strand?—I cannot say how much he would save; of course, if you take away a proportion of the traffic, he will go quicker; but the streets are for traffic of all kinds.

165. Is there any reason why the slow traffic should go along a line where there is not room for both slow and quick traffic, and where the slow traffic makes the quick traffic go at foot-pace?—The slow traffic is there to a great extent for purposes which can only be accomplished by going along that line; for instance, if you exclude heavy traffic from the Strand, you exclude the delivery of goods at intermediate points. If the only object of slow traffic was to get from one distant point to another, you might more reasonably require the heavy traffic to go along a certain line, in order to leave the Strand more free for speedy traffic; but a great proportion of the slow traffic has to go to intermediate places. In like manner as to omnibuses, upon which a question was asked me just now; it would be a great hardship to exclude them; the object of people who travel by omnibuses is to go to various places along the lines the omnibuses traverse. The omnibuses naturally go along the line where they find most customers.

166. You think that slow through traffic may be fitly excluded from certain streets, where there is a large amount of traffic going backwards and forwards?—I think to a certain extent that might be done.

167. Sir *William Russell.*] I gather from your evidence that it is your opinion, that to make any Act effective it must be a general Act, and applied to the whole metropolitan district, as well as to the City?—Certainly, I think so; I have a very clear opinion upon that.

168. And that the regulations outside the City would by that means be made to harmonize with those inside?—Yes.

169. In fact, the effect of an Act simply for the City itself would be to enable them to enact regulations within the City which might not in any way harmonise with the traffic outside?—Yes, undoubtedly; I would go beyond that; I believe that no legislation for the City alone could be so effective, even for the purposes of the City, as general legislation for the whole metropolis.

170. Do you not think that the powers asked by this Act are too great, supposing them to apply both to the City and the metropolitan district?—I think that there are several of them that ought not to be enacted; there are some that are re-enacted; I do not know why.

171. Mr. *Gathorne Hardy.*] The Act of 1863 is repealed, you know?—I mean that they are re-enacted as compared with the Act of 1839, 2 & 3 Vict. c. 94, the City Police Act; for instance, sliding in the streets is an offence by the Act of 1839, and that is re-enacted here; I do not know for what reason; I will mention a specimen of what is intended. There is one clause which is in the former Act, "For regulating the height and width of carts and waggons." How height affects the traffic I do not know. The mention of width I can of course understand. Then there is a clause regulating the mode in which cabs or hackney carriages shall be distinguished when hired, and when not hired. Now the general law forbids any carriage plying for hire except at an authorised standing, and this would be licensing carriages if they put up a certain mark to ply for hire on the streets. Then, "For regulating the rate at which vans may be driven." I do not know how that can be done. Who is to decide what the rate is? Policemen are very bad judges of rate. I have seen a policeman found great fault with by a magistrate for saying that a vehicle was driving at 12 or 14 miles an hour. I dare say it was not; but he gave it to the best of his judgment that it was going at that pace. Therefore how you can regulate the pace I do not know; in page 3, paragraph (H) a bye-law may be made: "Generally for preventing obstructions in the streets in any case where the same may be thronged or liable to be obstructed." That gives an opening to every kind of regulation. There is nothing whatsoever that might not be said to be brought within that category. Then there is a regulation also requiring a man to sit on the outside of his waggon; that does not seem to me to be a reasonable regulation; he cannot see, to be sure, when he is at the side or inside; but I am not aware that any great hardship arises from that. And then, again, "Every person who shall drive or conduct any kind of locomotive propelled by steam;" that is unnecessary, because there is a law already upon that subject. "Every person who shall in any manner wilfully prevent any other person from passing him." Now, if I walk quicker than another person I should be liable to a penalty for that;—"or any waggon, cart, or other carriage; or horse, mule, or other beast of burden under his care." If one waggon drives quicker than another I should think it would come within the words of that clause. The following part is reasonable, and I should think would make the first part unnecessary: "Or who, by negligence or misbehaviour, shall prevent, hinder, or interrupt the free passage of any person, waggon, cart, &c.;" but the first part seems to me to be either futile or unreasonable. Then it refers to sliding; that, again, is already prohibited by the Act of 2 & 3 Vict. c. 149. Then, again, any person who shall "stand, loiter, or remain together with other person or persons in any street or footway without reasonable cause:" that is, I think, a very arbitrary power, because persons may be stopping for conversation rather longer than is thought reasonable, and may thereby commit an offence. Then the following part of it prohibits the sale of any article whatsoever in the streets. I do not know whether it may be thought right to make such a law.

172. Mr. *Kekewich.*] Or placing flower-pots in the window?—Yes. I had the superintendents of police together the other day, and I asked them if they ever knew an accident happen from that, and they said they did not. I am not aware of any accident having happened from it. A chimney-pot or a tile may be thrown down occasionally.

173. You think those powers much greater than ought to be given to anybody?—Such powers ought to be given to no one. I think they are arbitrary and unreasonable. They might be vexatiously applied.

174. I gather from your evidence that, in fact, the City has already not been able to exercise the powers it has under the Metropolitan Cattle Market Act on account of a certain opposition, although it had arbitrary powers in that case?—I understood that that was rather a class opposition; it was the opposition of the cattle sales-

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men and carcase butchers; they objected very much, I heard, to the regulations.

175. Still the City were not able to enforce the powers, though they got very large powers in the Act?—They were not able to enforce them, or they did not enforce them. Then there is another objectionable clause on page 6: "Every person who shall by any other means than herein provided, wilfully obstruct the free passage of any street or footway, or insult, jostle, or annoy any person passing along any street or footway." Jostling persons in crowded streets, if it be made an offence, I think is rather severely dealt with. The Act seems to me to be drawn with excellent intentions as regards the traffic; but, I say it with all respect, if you look at it as it stands, the means taken to effect the object are certainly in some cases very arbitrary.

176. Your opinion, as I gather it from your evidence, is that the only way to deal with the subject is to lay down by law certain general rules, and, as far as possible, to let the traffic be regulated by law; but you think that those rules should be the most limited number possible?—I think so; and although I am a policeman myself, I think the discretionary power to make regulations should be very carefully limited.

177. And that the remainder of what is necessary should be done by regulations for minor details made by the Secretary of State?—With the authority of the Secretary of State.

178. With the authority of the Secretary of State, but upon the recommendation of the Commissioner of Police?—Yes.

179. Are you prepared with any general outline of those regulations which you consider ought to be put into an Act, or rather the enactments that ought to go into an Act of Parliament, and also the general regulations which you think would be beneficial?—I cannot say I am prepared with them in any detail. I have alluded to some; for instance, the restricting of the hours of delivery of coals, and not beer only, but all sorts of liquors, and even that ought to be limited to where it is done in a street; because if you have a back yard that people can go into for delivering coals or beer, I see no harm in their doing that at any hour, except as regards the passing through the streets, which is not a very great matter perhaps; but the delivering of coals in the streets I think might be restricted, reasonably, to certain hours, say before nine o'clock in the morning, and likewise all classes of scavengering, which it seems is restricted in the City; but I should carry it to the extent, I think, even of restricting the watering of the streets, and everything that can be prevented without a balance of greater inconvenience. There is always a balance of convenience and inconvenience to be struck; but I think, on the whole, the former would greatly preponderate by limiting the time in many cases.

180. You consider that the interference of the police should be as limited as possible?—I think it should. Policemen are disliked enough, without interfering in cases where it is not necessary. I will refer to another very objectionable provision in this Bill, on page 6: "Every driver of any waggon, cart, carriage, or other vehicle, and the rider of every horse or other animal, who shall not follow the direction of the constable on duty in any street with regard to the street or portion of street to be used by him, or the direction of route he must take through any street, in any case when any obstruction is in any way wholly or partially caused, or likely to be caused." Now I think to give a constable power to order a rider to go to a particular place in any case without any written authority, or anything beyond his own direction, is giving a very invidious power to the police. I should be very sorry to be responsible for all the cases in which a policeman would interfere, and when complained of I should not be able to support him. I should be compelled to think very often that a very indiscreet exercise of power had been made, and therefore I should be very sorry that the policeman had the power. I am sure I should have a great many complaints if I were to stop riders going into the parks, and compel them to obey the policeman on duty.

181. You consider further that the passengers in omnibuses are just as much entitled to go the way they prefer as anybody in a cab?—Quite so. Otherwise it would be imposing a heavy tax upon people in compelling them to take a cab at the cost of a couple of shillings or so, instead of riding in an omnibus for a few pence.

182. They are entitled to the free use of the streets just as much as those who ride in carriages and cabs?—Quite as much; in fact, perhaps more so, because each omnibus carries 30 persons, whereas a cab only carries two or three.

183. You think that regulations might be beneficially made as to the time for scavengering, and as to the packages left at shop doors and on footways?—Yes.

184. And you think that there are a great number of small regulations that might with benefit be made?—I think so. I would call attention to the powers that already exist, and which I think to a great degree effect what is required. The City Police Act, by section 35, paragraph 6, enacts that "Every person who shall cause any cart, public carriage, sledge, truck, or barrow, with or without horses, to stand longer than may be necessary for loading or unloading, or for taking up or setting down passengers (except hackney carriages standing for hire in any place not forbidden by law), or who by means of any cart, carriage, sledge, truck, or barrow, or any horse or other animal, shall wilfully interrupt any public crossing, or wilfully cause any obstruction in any thoroughfare, is liable to a penalty, and may be apprehended;" these are very large powers, and powers which, I think, if energetically and discreetly exercised would go almost the whole length to which interference ought to be allowed, considering that the streets are not merely for traffic to pass through, but for the convenience of stopping at places for carrying on the business of the public. The difference between London Bridge and the streets is, that on London Bridge you have merely to go along from one end of the bridge to the other, but in the streets you have to stop at a variety of places, and also to turn into side streets and out of other streets into leading streets. Therefore I think that the difficulty of carrying out regulations, such as you might have on bridges, in the streets would be extreme; it would impose a responsibility on the police that really could not be effectually executed by them, and at the same time cause a great deal of vexatious interference.

185. It would interfere very much with the different trades at the different shops along the lines of the various routes taken by the traffic, would it not?—I should think it would be felt a very

very grievous difficulty. I remember a gentleman being examined before the Committee in 1863, who stated very forcibly that it would put an end to his business if the law then proposed was passed.

186. Lord *Eustace Cecil.*] I think you stated before, that there was a plan for putting up signals in different parts of the streets?—Yes.

187. Would not that cause a great increase in the number of policemen and signalmen who would be required to look after those various signals?—No, I think not. I mentioned that only as a proposal which had been broached to me a few days ago, and which there seemed to be something in. It is not my own proposal; it was brought to me by a gentleman on the South Eastern Line. The proposal is that there should be arms with colours on them, and at night, lights. Those arms might be fixed upon the lamp-posts, for instance, and when put up they would mean notice to the drivers of vehicles to go slowly, or in other cases to stop. He said this might be done by a single policeman standing with a wire.

188. You would not propose to put up the signals without policemen?—It was proposed to put up the signals, and then that the signals were to be worked by policemen. His proposal is here, if any of the Committee like to look at it. There is a little plan and sketch appended to it.

189. The idea you had was only to put them up in very crowded portions of the metropolis?—In a few crowded parts.

190. Not generally at every crossing?—No; in fact there it would lead to an interference which I think is very objectionable. There ought to be no interference unless the difficulty is really grave. The public would rather suffer a little inconvenience than be continually interfered with.

191. Mr. *Kekewich.*] I believe the area of the metropolis for purposes of police, exclusive of the City of London, is a much larger area than that under the Metropolitan Board of Works, is not it?—Yes, the area of the Metropolitan Police extends in round numbers sixteen miles round Charing Cross, exclusive of the City of London. It has a circumference of about 90 miles.

192. Therefore there is a great portion of that area where the population is not dense, and where there is not a great traffic?—Yes, in the rural roads.

193. Therefore any stringent regulations for the heavy traffic would be unnecessary in those parts?—They would be quite unnecessary there.

194. Your idea, as I gather from your evidence, is that there should be a general system of regulations applicable to the whole of the metropolis and the City, and that there should be other regulations which should be enacted for the City alone?—No, I am not aware that I have said so, and I am not aware that the City requires any special legislation.

195. Do you think that any general regulations would be applicable to the City?—I think so; I do not see that any special regulations are required in the City that are not required, or so nearly as to make very little difference, in other parts of the metropolis. For instance, I have alluded to the Southwark side of London Bridge, to Whitechapel and Aldgate, to Holborn and Chancery-lane.

196. Would not a division of the traffic between Cannon-street, and Cheapside, and the Poultry be a necessary regulation to be given into the hands of the local authorities?—I think I should not give such powers to anybody. Of course, if there was a general regulation made, it might be stated that it was to be exercised wherever it was necessary, not specifying the localities. I think as much as possible should be done by specific enactments of the law in an Act of Parliament, and as little as possible left to a discretionary power. I am speaking now of any regulation of a permanent character. As regards those powers that exist both in the City and in the metropolis, of making regulations for special occasions, and for particular places; for instance, the Houses of Parliament, and the Palace; and, in the City of London, the Bank and the Guildhall, and some other places, powers might be given to make regulations with regard to those matters according to circumstances, which vary more or less. But as regards the general traffic of the streets, I think it ought to be regulated by legislation, by Act of Parliament.

197. I daresay you recollect that in the evidence given before the former Committee a good deal was said about the traffic in the City of London, in the small streets, with regard to depositing merchandise there?—Yes.

198. I think the Court of Aldermen have published certain regulations with regard to that, have they not?—I am not aware of any with regard to those matters; all the regulations that have been made are those that I have mentioned; they are very few; it has not been my business to study them.

199. Would you, in any general regulations, prescribe the hours at which merchandise should be delivered?—Not merchandise, I think.

200. Packages?—I am not sufficiently acquainted, perhaps, with the habits and customs of trade to speak with any great certainty, but I remember certain gentlemen who were examined three years ago, whose evidence I read afterwards, gave evidence that seemed to me abundantly sufficient on that point, showing why there should be no such power. They said that it was sacrificing the interests of the inhabitants, and the proprietors of a large portion of the traffic. The traffic has a combined object; first, that of passing through; and, secondly, that of getting to different places along the line, and doing what is required there.

201. I think you are of opinion, that in any general regulations, there should be some rule for the hours at which coals should be deposited?—Yes, and several other things; I mentioned coals, and liquors in casks.

202. Casks of beer?—Yes; but I did not limit it to beer merely.

203. Any casks?—Yes; and various other things no doubt would occur to one. If I were preparing the actual clauses of an Act of Parliament, there are other subjects to which one would apply such a clause; I mention, in the first instance, everything relating to scavengering, and everything relating to the delivery of goods of an ordinary character; I mean by that, things which are ordinarily and frequently wanted, and that may as well be delivered at one time as another.

204. Have you had many cases of accidents to carriages and horses arising from furious driving, brought before the magistrates, or which have come under the notice of the police?—A great many of those cases that I read from the return, are cases of furious driving, and in some of those

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cases, accidents have been caused as well as the mere commission of the offence of furious driving.

205. Is there any difficulty in proving the case upon a charge of furious driving?—There often is, for you cannot catch a man when he is driving at a furious pace.

206. You have read these 22 causes of obstruction which are enumerated in the Bill before us; are you not of opinion, that there would be a great deal of difficulty in proving the cases against offenders in respect of them?—That is part of my objection; but they seem to me to be so arbitrarily taken. For instance, the last of them, to "jostle and annoy" persons; under words so large as these, in a crowded street, I think everybody might be liable to this charge; it would be very difficult to prove that you did not jostle or annoy anybody.

207. And the paragraphs respecting the driving of waggons by boys of 14 or 16, would be very hard to enforce?—Those seem to me to be quite unreasonable, because many boys, even of eight or ten, are quite as fit to hold a horse as anybody else; a sharp boy of 15 or 16, would drive a pair of horses as safely as anybody.

208. I think you stated in your former evidence which I heard, that if you had the same power over the streets which you have now, and which I think gives you control over places of public resort, you could keep the streets perfectly clear and prevent any obstruction?—As clear as any crowded city can be kept; it is in vain to suppose that you can drive along the crowded streets with the same ease as along the suburban road, or to suppose that you can drive along such crowded streets as the Strand or Fleet-street with the same ease even as you can along Portland-place or round the Park.

209. In the time of the Great International Exhibition, you had no difficulty in keeping the thoroughfares clear, had you?—No; I may say it was admirable; most persons say so, and it was done without any additional powers; that is the great matter. The powers we have are considerable, and if they are exercised vigorously, there are very few cases, I think, in which more are required; the street traffic may be relieved to a great extent.

210. I believe the licenses granted to omnibuses do not prescribe the routes they are to take?—It did formerly, but it does not now; it merely prescribes the limits.

211. Do you regulate their course at all?—No, the Inland Revenue Department does.

212. For instance, if an omnibus comes from the Strand, is its course prescribed as to whether it shall go up the Haymarket or Waterloo-place?—Not at all.

213. That is done by arrangements amongst themselves?—Yes, according to their custom; I mention, as an instance of how oppressive interference is sometimes found to be, the Board of Inland Revenue did formerly prescribe the routes; it was stated, for instance, with respect to an omnibus going from Somerset House up to Hyde Park Corner, "You are to go down the Strand and up Regent-street, or up Piccadilly, or along St. James's-street," whatever the line they prescribed might be; but it was found a great hardship not to be able to deviate from that to take up or set down passengers.

214. Is there any regulation as to omnibuses stopping on crossings?—Yes, they are prohibited from doing so by the law. If they stop on a crossing they are liable to be summoned for it, and a great many are summoned. Omnibuses and cabs are prohibited from stopping on a crossing; the words are "any place usually used as a crossing by foot passengers;" there is a law against it, 6 & 7 Vict., c. 86, s. 33.

215. According to my experience, nothing obstructs the crossings so much as omnibuses stopping not actually upon them, but with the step hanging over?—Yes, that is quite true; but the ladies who use omnibuses complain very much of having to step out on to the mud.

216. Mr. *Miller.*] Would not anything which diminished the amount of traffic in the streets be much more practicable and better in all respects than any rules you could make to regulate the traffic?—No, I think not; it is very hard to regulate the traffic along the streets more effectually, no doubt.

217. I allude to slaughter houses in particular; do you know how many slaughter houses there are licensed in the Metropolitan district?—By the last return, I think there were 3,000; a very large number, certainly.

218. Three thousand slaughter houses?—Yes; I have the return somewhere.

219. Do not those slaughter houses occasion, as a general rule, an enormous amount of traffic through the streets of London of cattle and sheep coming to them?—Yes, certainly. There is a power granted by that same Act, the Metropolitan Market Act, 1857, to regulate the routes to the slaughter houses; but when I found that the county magistrates had licensed such a number of slaughter houses, I declined to exercise the power, because I said it was impossible (and I think it obviously was so) that I could regulate the route to every slaughter house to and from the Metropolitan market. If there had been a few only it might have been done.

220. Do you know the number of cattle and sheep driven to the slaughter houses; I do not allude to the present moment of course, when there is a suspension of trade; but in the general way?—I cannot say off hand. I think there were some 2,000 or 3,000 each market day; there are two market days in the week.

221. Would it not have a very important effect as regards diminishing the traffic of London if those slaughter houses were done away with?—I think that is one of the matters that I should like to include in a Bill if I were drawing one. I spoke of the delivery of heavy casks and such things, but I think that would be a very important regulation likewise, and it seems to me to be not an unreasonable one. I know that there are strong interests opposed to it, but those interests ought not to prevail, and would not prevail, of course, if we had an independent power to make the regulation, or what we wish to prevent were totally forbidden by law.

222. In fact, is not it the most important suggestion you can make for the diminution of the traffic of London?—I think it is a very important suggestion. There is this qualification to it, that the driving of cattle is now limited within certain hours, so that it does not prevail throughout the day. It was formerly a greater evil than it is now. But, taking an illustration, there is a place close to St. James' Church, in Piccadilly, where may be seen continually, not cattle, but sheep forced down the steps into the slaughter house. A certain number of sheep are forced down

down the steps into this little place where they slaughter them, and several passengers in the street are stopped meanwhile. That is quite a barbarism at the present time, and it causes a great amount of inconvenience as regards the subject of this inquiry.

223. Something has been said about the regulation of the cattle traffic in the City. In point of fact, was not it the removal of Smithfield Market to Islington that created that improvement principally?—I believe it was.

224. Rather than any regulation that was made?—No regulations could have been effectual as long as you had a market in the heart, as it were, of the City.

225. With respect to the accidents which take place in London, can you tell me whether as a rule they take place during the daylight or at night?—I think principally (I am speaking a little loosely) in the day and in the evening, because there are so much fewer people at night about the streets.

226. Have you any reason to believe that if the streets were better lighted the accidents at night would be less than they are?—I think that would all tend to security and safety, and indeed the security of property and person from thieves. It is perhaps more important in that respect than in the other.

227. Can you suggest any authority besides the parish authorities, who should be able to light the streets where it is evident that they are dangerously dark?—That is one of the questions as between the self-government, of which people are so fond, and centralization.

228. Will you answer the question, if you please?—I think centralization to a very great extent, in many cases, a very great advantage.

229. From your experience of the streets of London, you know that there are places called refuges?—Yes, I know what you refer to—the lamp posts.

230. Posts which people can stand by in the centre of the street?—Yes.

231. Do you believe that if the number of those refuges was increased in the streets of London, it would help to diminish the accidents that occur in the streets?—Yes, I think that it would. But, of course, the streets must be of a certain width or they would take up too much space. I think they are very great advantages, for they enable many people to get across the street by short distances who would lose their wits if they found themselves in the middle of a wide street with carriages coming on all sides. These posts have a further great advantage, that they divide the traffic. Carriages coming one way naturally take the proper side of the lamp-posts, and those going the other way take the other side. They are very useful in that respect as well.

232. As these refuges are now placed by the authority of the parishes, would it be desirable that the Commissioner of Police, when certain reports are made to him, should have the power of ordering one of them to be placed where he thought fit?—The question immediately arises then, who is to pay for it. Unless the Commissioner of Police was to have the power of ordering the rate collectors or the local Boards to provide the money, there would be a difficulty.

233. Irrespective of paying, as regards the prevention of accidents, do you think that it would operate beneficially?—I think it would. I may say that I have on many occasions represented to the local Boards the desirability of putting them up, and they have acted upon that representation. I do not at the moment recollect any case where I have represented the desirability of such a thing, and it has been refused; but I do not make a representation unless I see very strong grounds for doing so, stronger grounds than I should require if I had the power of doing it myself, perhaps. As regards the sweeping of footways, I have been required to bring that matter to the knowledge of the local Board. The Metropolis Local Government Act makes it imperative upon the local Boards and Parishes to sweep the footpaths, which is never done, and they have declined to do it, and also to appoint persons to sweep the crossing. There is a very great nuisance arising from that in various ways, from the number of little boys and girls who gather about the crossings and pretend to sweep them. The local Boards have the power to appoint a person and pay him, but they have not done so, except that, in a very few cases, I believe they have appointed a person, but in none have they paid him, and the crossing sweepers are still left to be paid by begging.

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234. I quite agree with you in the opinion you have expressed as to the bridges and subways?—That is an opinion which I do not wish to pledge myself absolutely to. I only mean that I do not know now how I should build a bridge that would be effective.

235. I agree with you in your opinion as to the general point of the efficacy of them; but if a general Bill were introduced into Parliament, would it not be well that a general authority should take the power to make them, providing that as to many streets where there are crossings you might exercise the power or not, as you pleased?—I see no objection to such power being given; but I should not look to it as a remedy for any evils that exist, for I do not see how it could be carried out.

236. A great deal has been said about the period of the day at which coals and casks of beer, and so forth, ought to be delivered?—Yes.

237. It occurred to me, when those questions were asked, that if the rule that was suggested were adopted, it might bear very hardly indeed upon the coal merchants and others, because they would have to keep an increased number of horses if they had to do all their work in that short time?—I suppose that would be the case in some degree: but every advantage has some correlative disadvantage, and the disadvantage you are going to remove is what is not only an evil as regards the carrying quantities of heavy goods through the streets, but causes obstruction in the streets, in consequence of the waggons standing still, with the horse's head turned out towards the street, and with the end of the cart towards the house, thereby greatly abridging the whole width of the thoroughfare.

238. I have been asked by an Honourable Member of this House to call your attention to the shoeblacks, and what are called the "Commissionaires;" are they of much use, and do you employ them in your district?—They are there. I have no power to interfere with them. I have had frequent communications with gentlemen connected with benevolent societies, who urge me to patronize them, and to provide employment for them; and I have said that all I will undertake to do is that the police shall not remove them,

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them, as long as they create no inconvenience, but I have no power to prevent others coming as rivals to them, unless it causes a great amount of nuisance.

239. Would it not be desirable, seeing that there is a great deal of rivalry between authorised and unauthorised Commissionaires, if you had the power of regulating them?—Yes, I think it would; there is such a power in the "City of London Traffic Act."

240. And that power is introduced into this Bill also?—Yes; I should think that it is a useful power. These shoeblacks are largely used by the public now.

241. Do you find them useful?—Yes, they seem to be useful; I have heard that many people have them into their houses in the morning, and employ them in that way.

242. Although you are very delicate about employing the policeman unnecessarily, do you not find that the men who stand about the streets, as, for instance, betting men, are a very great nuisance in the streets, and ought to be removed?—Yes, they are.

243. Would you have any objection, or do you see any difficulty in employing the police to remove them?—I have no power to do so now, and if it was attempted to give power, it would be very difficult to define the offence, because you could not make a law against betting men only. You come to a great difficulty when you attempt to define who you are to interfere with, and who is not to be interfered with. Supposing there were any great money panic, or a great excitement about business, and many persons stood together in the streets, it would be unreasonable to make that an offence. But if such people as you allude to cause any great obstruction or annoyance, a clause might probably be framed so as not to cause any great amount of injudicious interference.

244. Mr. Alderman *Lawrence*.] With respect to cabs, I think you stated at the commencement of your evidence, that you had the licensing of the drivers, but that the cabs themselves were licensed by the Board of Inland Revenue?—Yes.

245. Have not cabs to be approved by you before they can be licensed?—Yes.

246. Without throwing any blame whatever upon the head of the police, are not the cabs of London the worst, or almost the worst, public carriages that are employed in any principal city of Europe, or in any town of England?—I should say not. If you put so large a question as that,—they are not what I might wish them to be, I quite agree, and I will tell you why that is. The police, so far as they are concerned, have no power to prevent a cab being used unless it is in such an unfit state that a magistrate will convict for it. The previous inspection that takes place of the cab, cannot, and does not prevent the owner, when he has got a license for cab A to transfer it to cab B, so that he may take a very unfit cab into use, having had a fit one licensed. That is the way in which they continually escape the law.

247. Do you think that the smallness of the fare, or the duty extorted from the cab-owner in London, which is not levied in any of our principal towns, causes London to be supplied with the worst public carriages of any of the principal towns of England?—I do not quite admit that they are the worst. I think they are bad.

248. Do you think that that is owing to the duty levied by the Government, or the lowness of the fare?—I think the fares are too low; I think differently now upon that point from what I once thought. I do not think there ought to be a sixpenny fare at all. I think the lowest fare ought to be 1 *s.*; it is in my opinion, hard to take a man off his stand for a 6 *d.* I know that it is felt to be a great grievance by the drivers, and I think reasonably so. With regard to what you said about their being the worst cabs, I may add that they are certainly the cheapest cabs in any place I know of.

249. Mr. *Labouchere*.] In England?—In any town that I know.

250. Mr. Alderman *Lawrence*.] Do you not think that if the duty were removed, which is only payable upon cabs in London, and not upon cabs in Brighton, Hastings, or Leamington, we should have better cabs in the metropolis?—I am not very sure about that; I think the great benefit would be to the cab proprietors. The present system is not a good one. Very few of the drivers are the owners of their cabs. The cab proprietors hire out the cabs at so much a day generally, and the man who takes the cab undertakes to pay a certain sum for it, and he does not get anything to put into his own pocket until he has made up that amount. That is an encouragement to extortion from the commencement. You cannot expect it to be otherwise. The owners demand what they can get. I do not blame them particularly for it. It is what any man would do, but they very often demand much more than can be fairly earned by the cabman.

251. You have alluded to the question as between local government and centralisation; upon that point I wish to ask this question, Are not the public carriages in all the towns of England placed under the municipal or local authorities, and is not London the only exception to that rule?—I believe so, but I am not sure.

252. And London is supplied with worse public carriages than any of those towns?—I do not quite agree to that; I have seen very bad ones in country places.

253. I believe the management of cabs is the only matter confided to a central authority in London; all other matters, the lighting, paving, scavengering and so on being given to the local authorities; this is the only item which is taken out of the list of matters which are managed by the local authorities in the various towns of England; and in this case you admit that the system is bad, that the cabs are bad, and even worse than can be found in most towns of England?—To a great degree I admit all that; but what is the central authority you refer to?

254. The Home Secretary?—They are not in any degree under him.

255. The Commissioner of Police, then?—They are only under him to the extent which I have stated to you, and that control is rendered by the state of the law, a very inefficient one. The law is, that no license shall be granted by the Inland Revenue for a cab, except upon a certificate by the Commissioner of Police that the cab has been examined and is fit to be licensed. When that certificate is given the cab is perfectly fit; but that does not prevent the owner from immediately using another cab than that to which the certificate has been given. No mark can be put upon the cab showing that that cab only is to be licensed and used, but when a cab

cab is once licensed the proprietor may apply the license to any other cab. He may have a number of bad cabs in his yard, and can use them when he pleases, having once got the license.

256. Is not the present system established under an Act of Parliament obtained by the Home Secretary; and was not that Act establishing the system obtained under the advice of the Police Commissioner?—No, it was not.

257. The present system of cabs was established, as I understand it, not by the local authorities, but by the direct action of the Government?—It is established by Act of Parliament.

258. By an Act brought in by the Government?—That I do not know.

259. *Chairman.*] Though it is your opinion that any Act for the regulation of traffic in the metropolis must be very inefficient which is confined alone to the City, do you see any difficulty in its applying to the Metropolitan Local Management district. Have you any doubt as to what district you would have to manage?—No; inasmuch as that is a well-known district. I think you might well confine the Act to such a district as that. It is a little more extensive perhaps than what would be sufficient merely to include the crowded parts of the metropolis.

260. That would include all that part of the metropolis in which it would be necessary to make strict regulations for the conduct of the traffic, would it not?—Certainly it would include all that, and perhaps a little more. But the police laws must always be exercised with a little discretion, or they will be very grievous, so that the district being larger than is necessary is not a matter of importance.

261. You have been asked whether there are not crossings and other places in the City which are much more difficult to regulate than crossings out of the City. I think you stated, amongst other things, that you considered that the traffic within the City was not greater, but that it was more slow than the traffic out of the City?—Yes.

262. That slowness of the traffic makes it probably much more difficult to keep the crossings clear than where it is faster?—No, on the contrary; when you have traffic going at different rates, you will have a greater difficulty, if you want to cross the street, than if the traffic is going at a certain rate, because in that case you can take your distances through the carriages. But, if, while you are crossing a head of a waggon, a cab, or a quick carriage comes upon you, that is the real danger. I should say, with regard to the City that there is a circumstance which gives a much greater facility for crossing there, and that is the streets are so much narrower. The real difficulty is at a wide crossing. That difficulty is to a certain degree abridged or reduced by the refuges that have been spoken of, because they make a wide street into two narrow ones for the purpose of crossing. But the streets in the City are much narrower. When I go there I find no difficulty, because they are so very narrow, and also because the traffic is generally going slower, that enables you to wind your way through it with ordinary nerve. But in the crowded parts of the district out of the City you have different classes and rates of speed of traffic, which make the crossing much more dangerous. I do not know what the returns show as to the comparison between the two.

263. Does not the slowness of the traffic in the City show those crossings to be much more encumbered with traffic than the others?—It does; but I think the difficulty is, in fact, less, because you can take your distances and get through the slow traffic, whereas you cannot get through traffic going at different rates, because while you are passing a slow vehicle you are liable to be cut off by a quick one.

264. Is it not the case that in certain parts of the metropolis (as I think I have observed), the heavy traffic has very considerably increased of late. Take Park-lane, for instance; there is a very large railway terminus at Victoria, and another very large railway terminus at Paddington, and those termini increase the traffic of Park-lane?—Yes.

265. And the heavy traffic between those termini themselves, and between those termini and other parts of the town, has of late years very much increased?—Very much at that particular point which you speak of, owing especially to the new Victoria Railway Station. A large number of omnibuses go there, but the whole of the traffic of the metropolis is increasing everywhere.

266. Do you think that the shutting up of the wharves during the formation of the Thames Embankment north of the Thames, has increased the heavy traffic in the neighbouring streets?—Certainly, it has very much increased the traffic, and it has also tended to bring it to particular places, making a greater continuous line of traffic in certain streets, other streets being shut up in which it was formerly more diffused; for instance, there is no wharf now between Westminster bridge and Blackfriars Bridge, I believe, but at all events, there is none up to Waterloo Bridge; so that those wharves from which coals used to be largely supplied being closed, the coals are brought from other places; that causes them to be brought through more crowded streets; those are amongst the difficulties which arise. I do not know how you can guard against them.

267. That, in some degree, will be obviated probably when the streets are open which communicate with the Thames Embankment?—I expect so; I hope that ultimately the Thames Embankment will be a considerable relief to the traffic.

Friday, 23d March 1866.

MEMBERS PRESENT:

Mr. T. G. Baring.	Mr. Labouchere.
Lord Eustace Cecil.	Mr. Alderman Lawrence.
Mr. Gathorne Hardy.	Mr. Miller.
Sir William Jolliffe.	Sir William Russell.

THE RIGHT HONOURABLE SIR WILLIAM JOLLIFFE, BART., IN THE CHAIR.

Colonel JAMES FRASER, called in; and Examined.

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268. *Chairman.*] YOU are the Commissioner of Police in the City of London?—I am.

269. How long have you held that office?—About three years.

270. What are the powers which you possess, under the Acts which apply to the whole of the metropolis, with regard to the regulation of traffic in the City of London?—The City Police Act, which is distinct from the Metropolitan Police Act, entirely governs the traffic of the City of London, under a clause which I will read to the Committee.

271. What is the date of that Act?—17th August 1839; the 2 & 3 Vict. c. 94. The 22d clause is this: "And be it further enacted, that it shall be lawful for the said Commissioner, with the consent of the Court of Mayor and Aldermen, from time to time, and as occasion shall require, to make regulations for the route to be observed by all carts, carriages, horses, and persons, and for preventing obstruction of the streets and thoroughfares within the City and liberties, in all times of public processions, public rejoicings or illuminations, and also to give directions to the constables for keeping order and for preventing any obstruction of the thoroughfares in the immediate neighbourhood of the Mansion House and Guildhall of the said City, the Royal Exchange, the Bank of England, the General Post Office, and other places of public resort within the said City and liberties, and in any case when the streets or thoroughfares within the said City and liberties may be thronged or may be liable to be obstructed." There is also a clause before that, clause 20, relating to the traffic of the streets during the hours of Divine service on Sunday, Christmas Day, and Good Friday, by which it is enacted, "That on the application of the minister or churchwardens of any church, chapel, or other place of public worship within the said City and liberties, to the Commissioner of the City Police, it shall be lawful for the said Commissioner, with the consent of the Court of Mayor and Aldermen, to make orders for regulating the route and conduct of persons who shall drive any stage carriage, cart, cattle, sheep, pigs, or other animals, within such parish or place during the hours of Divine service on Sunday, Christmas Day, Good Friday, or any day appointed for a public fast or thanksgiving; and any orders which shall be so made shall be printed and affixed on or near the church, chapel, or place of public worship to which the same shall refer, and in some conspicuous places leading and contiguous thereto, and elsewhere, as the Commissioner shall direct; and every breach of every such order shall be deemed a separate offence."

272. Under that Act, you have made regulations for the arrangement of the traffic within the City, have you not?—From time to time regulations have been made, as occasions have required, under the power given in the 22d clause of this Act.

273. Is there anything in that Act which requires that those regulations should be approved by the Secretary of State?—No, nothing whatever; because it has been understood that the regulations made under this clause, are only of a temporary nature, referring to special occasions, and not to last longer than the occasion actually requires.

274. There is an Act, I think, of 1857, the title of which is, "An Act to amend an Act of the 21st of the reign of George 3, to prevent mischiefs that arise from droves of cattle," and so on; and under that Act you are entitled to make regulations with regard to the driving of cattle through the City, are you not?—The title of the Act is, "The Metropolitan Market Act, 1857." Clause 18 of that Act enacts, "It shall be lawful for the Commissioner of the City Police, with the consent of the Common Council, from time to time to make such orders, rules, and regulations as he and they shall deem expedient with respect to the driving of cattle within the police district of the City of London, and also for the Commissioners of the Police of the Metropolis from time to time to make such orders, rules, and regulations as they shall deem expedient with respect to the driving of cattle within so much of the metropolitan police district as is within the City of Westminster, and within the boundaries of the Boroughs of Marylebone, Finsbury, the Tower Hamlets, Lambeth, and Southwark, as defined by an Act passed in the Second and Third years of his late Majesty King William 4th, c. 64, intituled, 'An Act to settle and describe the divisions of Counties and the limits of Cities and Boroughs in England and Wales, in so far as respects the election of Members to serve in Parliament,' whether such cattle shall or shall not be proceeding either from or to the said market, or to any slaughter house or lair, and with respect to the days and hours on and within which, and the routes, streets, roads, ways, or places by, through, or in which cattle shall be driven, and also to make orders, rules and regulations for the control, regulation and good government

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ment of all persons driving, aiding or assisting in driving cattle within the said districts, and from time to time alter, vary or repeal all or any of such orders, rules or regulations; and any person disobeying or acting contrary to any such orders, rules or regulations, or driving, or aiding, or assisting in driving any cattle within such districts contrary to such orders, rules or regulations, or on a day on which or within hours during which, or by or along routes, streets, roads, ways or places, or in or by or through which cattle shall by any such orders, rules or regulations, be prohibited from being driven, shall for every such offence be liable to a penalty," and so on. "Provided always, that such orders, rules or regulations shall not be of or have any force or effect until the same shall have been approved under the hand of one of Her Majesty's Principal Secretaries of State; and such orders, rules or regulations, shall so far as the same relate to the police district of the City of London, be signed by the town clerk for the time being of the City of London, and so far as the same relate to the metropolitan police district be signed by one of the said Commissioners of Police, and shall be published as by this Act is directed with respect to the publication of bye-laws made under the authority thereof."

275. Under the authority of that Act, I think that regulations have been framed with regard to this traffic in the metropolitan police district, or in those parts of it which are designated in the Act?—Regulations have been made not only by the Commissioner of the Metropolitan Police District, but also by the Commissioner of Police of the City, for regulating the routes by which cattle shall be driven; those regulations were published in 1861. I have a copy of them here. The Commissioner of the Metropolitan Police has also made regulations within his district as to the time during which cattle shall be so driven; but no rules with regard to the time, so far as it affects the City, have been made since the passing of the Act at all.

276. No rules as to the time during which cattle shall be driven, have been made within the City?—No, simply as to the routes by which they shall be driven.

277. But out of the City, regulations have been made, and have been enforced by the police as to the time as well as the route?—Yes.

278. That in fact is the difference which Sir Richard Mayne alluded to between that part of the metropolis which was out of the City of London, and that part of the metropolis which was within the City of London?—Exactly.

279. Was it found that the regulations which were made without the City affected very much the regulation of the traffic within the City?—So far as the routes were concerned; the regulations respecting them were made in conjunction with Sir Richard Mayne originally. An arrangement was entered into between the late Commissioner of the City Police and Sir Richard Mayne as to which would be the most convenient routes for cattle to be driven by, but in the metropolitan district the Commissioner of Police makes rules for these purposes himself, and simply requires to have them confirmed by the Secretary of State, whereas in the City, under the clause which I have read, the Act requires that although a rule shall be made by the Commissioner of Police for the City, it must be with the consent of the Court of Common Council; and that appears to have led, in this instance, to some difficulty, for I find, upon referring to a correspondence which I have here, that took place between Sir Richard Mayne and the late Commissioner of the City Police, and subsequently between the late Commissioner of the City Police and the Town Clerk, that after the rules had been arranged and agreed upon by the two Commissioners of Police, and had been submitted, so far as they affected the City, by the Commissioner of the City Police, to the Court of Common Council, nearly two years elapsed before the consent of that body was obtained. The consequence was, that during the whole of that time there was no regulation at all in the City with regard to the routes by which cattle should be driven, except those that had been made under an old power that the City had under a previous Act.

280. Do you refer to the Metropolitan Market Act?—No; long previous to that.

281. Was it an Act "To prevent the Mischiefs that arise from driving Cattle," the 21st of Geo. 3?—Yes; that was the Act. In fact, the rules that were made under that Act by the City are still in force with regard to the time during which cattle may be driven in the City, because this more recent Act, the 20th and 21st Victoria, provides that until rules are made under this Act, the rules under the old Act shall remain in force.

282. Am I right in understanding you that though the Act of Parliament to which we have been referring was passed in 1857, the regulations did not obtain till something like 1860 or 1861 the consent of the Common Council, which was necessary in the case of the City, to give effect to the regulations?—Yes, so far as the routes by which cattle were to be driven were concerned, regulations were made to which the consent of the Court of Common Council was not obtained for nearly two years, but no rules have been made with regard to the time in which they should be driven.

283. Those regulations have never been made?—No.

284. It being necessary to obtain the consent of the Court of Common Council to the regulations as to the time, their consent was not obtained till several years after the passing of the Act; whereas, out of the City, where the consent of the Secretary of State only was required, the Act was at once brought into operation?—That is so.

285. Do you see any reason why anything should intervene between the Commissioner of Police for the City and the Secretary of State, any more than there is between the Commissioner of the Metropolitan Police and the Secretary of State, with regard to the regulations for traffic?—No; I think if there were no such intervention, the regulations would come more speedily into operation; there can be no doubt of it. I think I have given an illustration of it. I have here a copy of a letter that was written by the late Commissioner to the Town Clerk, dated the 16th of January 1860, in which he says: "Sir,—In reference to the letter of the Commissioner of the Metropolitan Police, suggesting an alteration in No. 14 Route for the driving of cattle, which, by a resolution of the Markets Improvement Committee on the 14th instant, was referred to me to examine and report upon, I beg to state that I have not yet received back the routes I submitted through you on the

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22d of April 1858, for the approval required by the Act; and until that necessary step be taken, I am not in a condition to consider any suggested alteration. I may, however, in the meantime, remind you that the streets objected to in No. 14 City Route formed part of those approved by Sir Richard Mayne, in No. 8 of the Metropolitan Route, and were for that reason only adopted as a continuation to City Route No. 14." This letter is signed by the late Commissioner. I think that that is the first instance in which, as far as I have been able to discover, the consent of the Common Council has been required to any regulations being made with reference to the traffic. Previously to that, and at this moment, in all other Acts, it is the Court of Mayor and Aldermen whose consent only is required; and that is a consent which is much more easily obtained, inasmuch as they are a smaller body, and do not require nearly so many of their body to assemble to form a Court. And as the aldermen are the magistrates of the City, I am in much more frequent communication with them than with the Court of Common Council.

286. Can you state any reason why the Court of Aldermen or the Court of Common Council should intervene between the regulations which are thought desirable by the Commissioner of Police in the City and the Secretary of State's approval, any more than any other body should intervene between the Commissioner of Metropolitan Police and the Secretary of State?—No, I am aware of none whatever; on the contrary, I think that matters would be expedited were it otherwise.

287. And you think that in future legislation it would not be well to have another body to intervene to give their consent, which in this instance has acted to prevent the Act of 1857 being carried into operation for a long time, at any rate?—I think it would not be advisable. I should mention, however, that I never experienced any difficulty with the Court of Aldermen in obtaining their consent to any regulations which I have proposed; but of necessity occasions must arise when it would not be easy to assemble the Court of Aldermen to give their consent to a rule which it may be necessary to put in operation probably on the following day; and although such a rule as that would not require the approval of the Secretary of State under the City Police Act, yet it would require the consent of the Court of Mayor and Aldermen, which it might be impossible to obtain within the requisite time.

288. There is a committee, is not there, of that Court who are particularly charged with the superintendence of the affairs of the police?—Not of the Court of Aldermen. The City Police Act gives the Court of Common Council power to appoint a committee.

289. A police committee?—Yes, a police committee of its own body to do anything that the Court itself has power to do; but the Court of Common Council has really nothing whatever to do with the regulation of the traffic of the streets; that is not one of the duties imposed upon the Court by the City Police Act. Their duties are almost entirely of a financial character; they have a voice in the election of the Commissioner, and they hear appeals against the police rates, and they levy the police rates upon the City. They appoint by a vote annually the number of men whom the Commissioner shall enrol in the police force, and they vary it and alter it as they see fit; but they do not interfere with the executive in any way at all, nor have they anything to do with the regulation of the traffic in the streets.

290. Then we come to the Act of Parliament, which was passed only two or three years ago, the Act of 1863?—Yes; I have it here.

291. Under that Act, I think it is the Court of Aldermen who have to give their consent?—It is the Court of Mayor and Aldermen.

292. They have to approve of any regulations that are made under that Act?—They make the regulations under that Act themselves; and they are submitted to the Secretary of State for his approval. The Act is the 26th & 27th Vict. c. 206; it is called "An Act for the better regulation of traffic in the streets of the City of London, and for the prevention of obstructions therein." It gives power to the Court of Mayor and Aldermen of the City of London "from time to time to make such bye-laws, rules, orders and regulations as they may think necessary or expedient for all or any of the purposes following," and the purposes are specified in six paragraphs and sections.

293. Will you state the object of those sections?—One is "For regulating the several routes to be followed, and the particular streets, or portions of streets, to be used" by the omnibuses.

294. Regulations were framed under that section, were they not?—Under that Act, 17 bye-laws were framed by the Court of Mayor and Aldermen, and after having been published in the "London Gazette" and in the daily newspapers, as required by the Act, they were submitted to the Secretary of State for his approval. I have the correspondence here which took place between the Secretary of State and the Town Clerk on behalf of the Corporation, in reference to those bye-laws. The Secretary of State declined to confirm more than three of them. I think he objected to 14 of the regulations, upon the ground that the preamble of the Bill did not give the Court of Aldermen power to make those regulations; that they were restricted to making regulations, having reference entirely or almost entirely to the routes of omnibuses and to omnibuses generally. The correspondence is not very long: I will read it if the Committee wish it.

295. Will you hand in the bye-laws that were proposed by the Court of Aldermen, designating those three out of the 17 which were finally approved by the Secretary of State, and which are now acted upon?—I will. (*The same were handed in.* Vide *Appendix.*)

296. Will you describe to the Committee the nature of the three regulations or rules that have been made, and have been approved of, and are now the law in the City?—The first is "every omnibus, metropolitan stage carriage, van, or other carriage licensed for the conveyance of passengers at separate fares, passing eastwards through St. Paul's Churchyard, and proceeding to, or whose destination as stated on such vehicle, or on its license, shall be London Bridge, shall when it reaches the south-east corner of St. Paul's Cathedral, pass down Cannon-street, and thence over London Bridge; and every such carriage making the reverse journey shall traverse the like route, and the driver of every such omnibus, metropolitan stage carriage, van, or other carriage licensed for the conveyance of passengers

passengers at separate fares, shall drive the same pursuant to this regulation," I may mention that this regulation has become inoperative entirely from the power which the proprietors of omnibuses have of changing the terminus of their route at their own pleasure. The Secretary of the General Omnibus Company stated that, turning the omnibuses down Cannon-street instead of allowing them to go through Cheapside, had the effect of reducing the receipts upon each omnibus, to the extent of four pounds per week, I think. The consequence was, that they changed the terminus of the journey of each of those omnibuses that had been in the habit of going over London Bridge to the Bank, and consequently, as their terminus was the Bank instead of London Bridge, they were then privileged to go down Cheapside, and have continued to do so ever since, so that this first rule has been and is now practically inoperative.

297. Though it was wished to divert the traffic, yet the omnibuses altering the termini at which they stopped, has defeated the regulation?—Yes, because this rule merely related to omnibuses whose destination was London Bridge, or the other side of London Bridge, and then the omnibuses ceased to make that their final destination. They made the Bank their destination instead, and by that means they were enabled to pass through Cheapside, which it was the object of this rule to prevent. The second bye-law was for limiting the height and width of loads between 9 a.m. and 6 p.m. It is this, "No person shall drive any cart, waggon, dray, or other vehicle, for the conveyance of goods, wares, and merchandise through the streets between the hours of nine in the morning and six in the evening, laden to a greater height than 16 feet, measuring from the ground, or laden to a greater width than seven feet, or the breadth between the outside of the wheels of which vehicle (except it shall have been in use before or on the 28th day of July 1863) shall be greater than seven feet." That rule, I may say, also has been of little or no use, from the circumstance that all vehicles in use on the 28th day of July 1863 were excluded from its operation. The consequence is, that those wide vehicles are still going about the streets of the City, and we have no power to prevent their doing so. The restriction as to the height has been carried out; but with regard to the width of vehicles, it has been almost impossible to do anything in the matter, because the vehicles that were in use at that time are not touched by the provisions of this clause. The third rule is, "No person shall drive any cart, waggon, or other vehicle wholly or partially laden with timber, scaffolding, or other poles, logs of wood, masts, spars, or other articles or things, whether consisting of wood, metal, or any other material, exceeding 25 feet in length, or 8 feet 6 inches in breadth, through any street between the hours of nine in the morning and six in the evening." That rule has been partially carried out, and fines inflicted for infringements of it. These are the only three rules which the Secretary of State approved.

298. The present Bill which is now brought in is intended to meet the difficulty that there has been in enforcing the Act of 1863, is it not?—Yes, and to some extent it will do so, I think, if it should be passed.

299. First of all the Secretary of State objected to a want of power under that Act to make the regulations which were proposed; and then, in consequence of the change of the traffic itself, which you have described, with regard to the omnibuses particularly, a great portion of the three rules that were approved of, have been inoperative?—Yes, that is so.

300. Is it, therefore, in consequence of the defect that is found in the operation of the Act of 1863 that the Bill is brought in?—Entirely.

301. And to remedy the evils which that Act is inadequate to?—To remedy those and other evils which have become apparent since. I may say, that the Secretary of State, in his letter returning these rules to the Corporation, made no objection to the rules themselves. He said, however good they might be, he felt himself without the power of confirming them under the provision of the Bill by which they were made; they were referred to the law officers of the City first, who gave it as their opinion that they came within the meaning of the Act; and the Secretary of State then referred them to the law officers of the Crown, who differed from the law officers of the City. The consequence was that only three of them were confirmed.

302. With regard to the traffic generally throughout the City, have you any suggestions to make which you would wish to place before the Committee concerning the general traffic, or any mode that you could suggest by which a uniform system should be adopted, not only within the City but in the immediate neighbourhoods of the City; so that there might be no interruption to your regulations within the City, from regulations which were not exactly fitted to them that existed outside the City?—I am of opinion that some regulations might be made which would be beneficial both to the City and the metropolitan districts; but the condition of the City is altogether so exceptional, that I think exceptional legislation is required to regulate the traffic within it. I will give my reasons for so thinking. I noticed the other day, when Sir Richard Mayne was under examination, that he produced to the Committee a map of the metropolitan districts, showing the area of the City upon it, a very small space, as it appeared to me, coloured in black. I heard Sir Richard Mayne state that he did not think it was necessary to make any regulations specially for the City, which would not well apply to the area around it. Now, I think it must be apparent that some special regulations are necessary for the City, from this fact, that the area of the City is, only about 720 square acres, and I believe the area of the metropolitan district is something like 700 square miles. The population of the whole metropolis is said to be nearly 3,000,000, and of those 3,000,000 we have in the City every day nearly 1,000,000, or one-third of the whole number, who not only enter the City, but return to the metropolitan districts in the evening. The City is the central point, in fact, upon which all these streams of traffic converge; and as they approach this central point, the streets, instead of being even of the same width as they are in the metropolitan district, gradually become narrower and more confined. The consequence is that, by the time these streams of traffic approach the City and enter it, from morning to night there is a dead block. I shall give the Committee some idea of it, perhaps, when I mention that in May 1865, by one approach to the City, namely, that over London Bridge, as many as 134,000 per-

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sons passed over that bridge alone. And when a return of the traffic was taken as far back as May 1860, it was then shown that no less than 706,621 people entered the City in the course of one day, every one of whom must have returned again; 57,765 vehicles entered the City on that day, and the daily number must, I think, have considerably increased since then. I can scarcely give the Committee a better proof of this than by reading an extract from a report of the London General Omnibus Company, which was published the other day prior to their annual meeting, when they declared a better dividend, I believe, than they had declared on any occasion previously. The Report stated that, "though they had suffered to some extent from the metropolitan railways, the loss was more than counterbalanced by the additional traffic in the streets; they carried 637,362 more passengers in 1865 than in 1864." At this moment there are two termini in the City of underground railways, and I see by the evidence taken before the Committee upon the last City Traffic Regulation Bill, that it was anticipated that the underground railways coming into the City would facilitate the traffic very much; whereas it is found to be exactly the contrary, as this report tends to show.

303. That railway only exists upon the north side of the City at present, so that the communication is only with one side of the City, is it not?—It comes as far as Moorgate-street now, but there will be one shortly which will come round the south side of the City.

304. You refer to the Inner Circle Railway?—Yes, the Inner Circle; there is also a railway nearly completed which will have a terminus in Cannon-street; that is not an underground railway, but one coming from London Bridge, and there is a railway about to be opened from Charing Cross to Cannon-street at this moment.

305. Looking at the effect that the underground railway has hitherto produced on the one side by which it now approaches the City, do you contemplate that a real relief to the traffic of the City will be gained when the Inner Circle is completed?—Judging from past experience, I should say not; I think indeed that the only efficient mode of relieving the traffic of the City would be by widening the streets, for they are altogether insufficient for the present traffic; but that, of course, would be a work of time, and very difficult to accomplish. But I am quite of opinion that some rules might be made under the powers which are asked for in this Bill, by which great relief might be given to the streets. Indeed, the whole of the traffic of the City, or the traffic which chiefly encumbers the streets of the City, is carried on during certain hours of the 24, and I think that if it were distributed over the whole 24 hours, seeing that the streets are so narrow, considerable relief might be obtained.

306. You think that there are certain portions of the traffic which might be done during the hours of the night that are not done now during the night, but during the day?—I think so; and that is one of the objects, sought to be attained by this Bill.

307. You have described the traffic which exists within the City, and how very difficult it is to deal with, as you think, more so within the City than in any other portion of the metropolis; do the rules made to regulate that traffic originate with the Commissioner of Police, or with the Court of Aldermen?—They should originate with the Commissioner of Police. All regulations with regard to traffic under the present Acts of Parliament, with the exception of the useless Act of 1863, originate with the Commissioner of Police; but (and that is another reason why power is sought in this Bill) there is no power at this moment under any Act of Parliament to make permanent regulations with regard to the traffic, or to give authority to anybody to regulate it upon an emergency; and emergencies are constantly arising in the City, when it is necessary to act without any authority at all.

308. That leads me to put a question to you again which I have already put to you: seeing the difficulty of obtaining authority within the City for the regulations you may suggest, do you see any reason at all why the suggestions you make for the regulation of the traffic should not be directly submitted to the Secretary of State, without the interference of the Court of Aldermen at all?—None whatever.

309. Would not that facilitate their operation at times?—I think that any regulations that would require to be submitted to the Secretary of State, must be regulations of a somewhat permanent character; and I do not know that their operation would be delayed by any reference to the Court of Aldermen. But I was more particularly alluding to all regulations of a temporary nature, regulations which it is necessary to enforce from day to day, arising out of difficulties which are presenting themselves every 24 hours. Under the present Police Act, before anything of that kind can be done, it is necessary to assemble the Court of Aldermen, and get their consent to any measure although the concurrence of the Secretary of State is not required. Difficulties present themselves constantly when it is necessary to make a temporary regulation, and one which requires to be enforced immediately, when it is impossible to assemble the Court of Aldermen in time. It would be very inconvenient indeed to them to be called together, and probably the exigency would have passed before the Court had assembled and given its consent.

310. Then we have before us your opinion, that with regard to the Court of Common Council, it has absolutely been a bar to the regulations with regard to cattle being carried out so soon as you would have wished, and you think also that upon emergencies it is difficult to assemble the Court of Aldermen upon all occasions when it becomes necessary to make a regulation?—Yes, there is no doubt of that; occasions present themselves constantly when it is requisite to make a temporary regulation, and enforce it at that moment, without reference to anybody.

311. But there would be no delay occasioned if the same authority were given to the Commissioner of Police in the City by any law that is about to be enacted, to apply at once to the Secretary of State for his sanction to the orders which he might think necessary, as is possessed by the Commissioner of Metropolitan Police?—No; any regulation so made by the two Commissioners, of course would come into operation simultaneously.

312. They would come into operation simultaneously, and would not be discordant the one with the other?— No, certainly not.

313. Mr. Alderman *Lawrence.*] I believe the City Police Act gives the Commissioners of Police in the City similar powers to those which the Commissioners

missioners of the Metropolitan Police have out of the City?—The difference is this, that the two clauses of the Metropolitan Police Act and the City Police Act, which relate to the traffic, are almost identical in their wording, with this exception, that the Commissioner of the Metropolitan Police makes the regulations without requiring the consent of anybody, but the Commissioner of the City Police requires the consent of the Court of Aldermen to make them.

314. Does not the Police Commissioner require to have the consent of the Secretary of State to his rules?—No.

315. Not under that Act?—No, not under the Police Act; in fact, I think, one clause seems to have been copied almost exactly from the other; the only distinction is, excepting that I have explained that the notices are to be posted in the City at the Guildhall, the Royal Exchange, and the Bank; and in the Metropolitan District at the Houses of Parliament and Charing Cross, I think.

316. The present Act for which the Corporation are seeking, will specify certain regulations which they think to be requisite for the traffic of the City, without its being necessary for the Commissioner to make his request from time to time to the Court of Aldermen to make bye-laws?—I think the object of this Bill is, first of all, to make certain enactments, and then to give powers to the Court of Aldermen to make regulations of a somewhat permanent character which may be altered from time to time, with the consent of the Secretary of State; but those regulations being, as I have said, of a somewhat permanent character, will not apply to the occasions to which I have been referring just now. In fact, the object of this Bill appears to me to be to try and include, in the shape of enactments, a number of the bye-laws and regulations that were made by the Court of Mayor and Aldermen under the Bill of 1863. And it appears to me that as many regulations of a permanent character as can be made should be made by enactment, because, then, if any thing is done with regard to the metropolis, the same law might apply to both the police districts, and I think it would also save the Court of Mayor and Aldermen some difficulty in making bye-laws, and in altering them from time to time; indeed, many of the enactments proposed are really copies of the bye-laws which the Court of Mayor and Aldermen made two years ago, and which the Secretary of State would not enforce. There is power given in the Bill, also, to authorise the Court of Mayor and Aldermen to make certain bye-laws upon certain matters which it was thought would be required to be changed from time to time, as the necessities of the City became more urgent.

317. I believe you consider that at the present time, notwithstanding all the improvements that have taken place in the City, the traffic has increased in a greater ratio even than those improvements that have been made?—Yes; the traffic has increased, but I confess I hardly know what improvements have been made.

318. I refer to the new streets and the underground railways?—The only new street that I am aware of that has been made in recent years, is New Cannon-street. That is the street down which it was desired to send the omnibus traffic, and it is generally supposed that that is really a wide street; but it is very far from being so. I think the roadway in Cannon-street is only about 30 feet wide. I have not the exact widths here, but I am tolerably certain that it is about 30 feet wide, and in some places I do not think that it is quite so much. And during almost the whole day, there are vans and waggons standing on each side by the kerbstone, and therefore the traffic is really limited in Cannon-street to two lines, and if one vehicle is going at a foot pace up Cannon-street, that vehicle regulates the pace yet Cannon-street is one of the best thoroughof all the rest of the traffic throughout the street; fares in the City at this moment.

319. I presume you heard Sir Richard Mayne's evidence the other day?—I did.

320. Do you agree with him that there is no peculiarity or speciality in the City of London as to the narrowness of its streets, the amount of its traffic, and the confined area of its boundaries, as against other parts of the metropolis?—No; I differ from Sir Richard Mayne altogether so far as the necessities of the City are concerned; I have already stated that I think special legislation is essentially necessary in the City to deal with the requirements of the traffic.

321. Do you know any part of the metropolis where, in the same space, there are the same number of termini or stations of railways?—I do not think that there is any space in the metropolis, within which there are so many railway stations, or in fact where there is anything like the concentration of traffic, that there is within the City.

322. Will you state the number of railway stations that there are in the City at the present moment?—There is a station at Moorgate-street of the Underground Railway; there is a station at Cannon-street; there is one in Lime-street, or just on the edge of it, and there is the Great Eastern Railway Terminus in Bishopsgate-street.

323. That is outside the City?—It is outside, but it pours the whole of its contents into the City directly.

324. You have omitted the station at Aldersgate-street?—That is a station upon the Underground Railway.

325. And there is one also at Ludgate-hill?—Those are stations. I thought you referred to termini only.

326. Will you mention the different markets there are in the City?—Yes, and they require almost special legislation. Newgate Market is one of the great difficulties connected with the City traffic, especially during the continuance of the Cattle Plague. We have at this moment to bring in the meat that is required by the whole metropolis, in vans into Newgate Market, and distribute it every morning before 9 o'clock. I may mention that during last week, on one morning, as many as 1,100 tons of meat were brought to Newgate Market in vans, and had to be again distributed in carts from the most inconvenient spot in London.

327. Will you describe the other markets in the City?—There is the Leadenhall Market, in the heart of almost the busiest part of the City. It has a poultry market and a fish market connected with it—both causing an enormous traffic. There is a proposal also, I think, before Parliament now, for an Underground Railway or Pneumatic Railway from London Bridge, which is to open somewhere close to Leadenhall market itself. The intention, I think, is to relieve London Bridge, but of course it would have

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the effect of throwing a number of persons immediately upon that one spot in the City, or close to that spot.

328. Then there is Billingsgate market?—Yes, Billingsgate market is an endless cause of difficulty; the fish that is brought there now comes chiefly by railway vans, which are discharged there, and is distributed again by carts throughout the whole of London. Formerly the difficulty was not so great, because most of the fish was brought by water to Billingsgate market, which is not the case now. It is brought by railway and carried in vans through the streets of the City down to the very narrow streets close to the market. The consequence is that all day long there are special regulations necessary to be carried out for regulating the carts and vans, and, in fact, making the street passable at all.

329. You cannot, I suppose, give the number of vans or barrows that come to clear out the fish in the day?—No; but the streets are filled with them; there is a constant succession of them from morning to night, because fish is brought at all hours of the day, and is immediately sold and distributed not only by carts that carry it all over London, but by innumerable hawkers' trucks and barrows and donkey carts, and every description of vehicle. I do not think there is such an accumulation of vehicles in so small a space to be seen in any part of London as at Billingsgate at those particular times.

330. You have also the hide market, have you not?—Yes, there is the hide market, and there is also the Farringdon-street market; but I am speaking more with regard to the difficulties of the traffic in the main thoroughfares, which are not only increased by the neighbourhood of these markets, but by the enormous concourse of people who come into the City every day in vehicles, and who leave it every evening.

331. Do not those markets and railway stations in the City, from the quantity of vehicles and the number of persons coming to them, require a large amount of police to direct the traffic specially for those places?—It is necessary at this moment to employ a large number of men entirely to prevent accidents, and to enable the traffic to pass through the streets at all. Very recently, at my suggestion and at my recommendation, the Common Council voted an annual sum for the payment of 50 additional constables expressly for this purpose. At the present time there are 92 men so employed, and I think that without the assistance of those men the streets of the City would be actually impassable.

332. Do you at the present moment think that you have too many men engaged in regulating the traffic, or what is your idea upon that subject?—No; I think a great many more might be very advantageously employed. Indeed, it is constantly necessary to employ the men upon the "beats" to assist in regulating the traffic and to keep it in two lines through the City; I am quite sure that the Court of Common Council would have readily acceded to a proposal for increasing the number beyond 50, but that the City Police Act only enables them to raise a certain sum by rates, and it was found that that sum had been so closely approached that it would not do to appoint more men.

333. Can you put in a statement of the number of accidents that have taken place in the City, showing the number of persons killed, maimed, and injured from cabs and other traffic?—A return was presented to the House of Lords, within the last few weeks, of the accidents which have taken place within the last fourteen months, from January 1865 until the end of February 1866, in the metropolitan district, and also in the City police district; by which it appears that in the metropolitan district there were 163 cases in which people were run over and killed, and 1,938 in which persons were maimed and injured from similar causes; that is, from being run over. In the City police district, in the same period, there were 17 fatal cases, and 237 instances of bodily injury. But I may mention that that, of course, does not include the number of persons who were run down, and who may have received injuries of which the police have no knowledge. Only the worst accidents come under the notice of the police, when people are carried off to the hospitals and treated there, or where the services of the police are specially required. Many people are run down by vehicles without being very seriously injured, and they get up and move off.

334. Mr. *Locke King.*] On what evidence have you obtained those figures?—I have quoted from the return made to the House of Lords.

335. Upon what evidence is that return founded?—Upon the reports made upon the daily occurrence sheets to me by the officers of police on duty. Every case is specified in the reports, and the details of every case with regard to the City are in my office now, and it is from those that this return is made.

336. From the police returns?—From the police reports.

337. Mr. Alderman *Lawrence.*] Do you not consider that, if a fewer number of policemen had been employed in the City, at the various crossings, a much larger number both of fatal accidents and injuries to persons would have occurred in the City?—I have very little doubt of it. I think it is owing to the presence of policemen at the crossings in the City that the occurrence of accidents, and very serious accidents, is prevented every hour.

338. Then I may take it as your opinion, that every fresh railway terminus in the City, or approaching the City, pours fresh traffic and a larger number of persons into the City?—Yes; I think that the proofs we have at present all show that the greater facilities that are given to people to approach the City, the larger number come there; that is, as far as I can judge by the evidence that we have; and I think a proof of it is that the fact of the omnibuses having lowered their rates of fare, which they have done in consequence of the underground railways taking the higher class of passengers, has induced people to travel by omnibuses, and to come into the City, who seldom did so before; so much is this so that you would find it difficult to get a seat in an omnibus at all, at certain hours of the day.

339. All those facilities which have been thought to take place easily out of the City, of course act in a similar way to bring more easily a larger number of people into the City?—Yes, no doubt of it.

340. In the City, there is a class of warehouses, I believe, which cause an amazing amount of traffic and trouble to the police; I allude to the various receiving-houses for the railways of this metropolis?—That is so; the railway vans now are in the habit of going round and collecting parcels at those receiving-houses, and conveying them

them to the railways which was not the case formerly. The omnibus companies have also established receiving-houses for parcels, so that the difficulties are increased in consequence of the omnibuses stopping to take up parcels in the main thoroughfares, in addition to the difficulty which the vans create by going round and collecting parcels and goods to be distributed throughout the country, and conveying them to the railway termini.

341. With regard to those railway vans that bring the goods from the railways in the morning and afterwards carry other goods out of the City, do you wish for restrictions as to the width and size of those vans and as to the pace at which they shall travel, and as to the capability of the individuals driving them; is it your opinion that regulations upon all those matters should be made?—Yes, I think that regulations relating to those matters should be made.

342. Will you give the details of them?—It seems to me that if this Bill is passed there are provisions in it for dealing with all those difficulties. With regard to the railway vans, of late years it has become the fashion to drive them at a trot, and sometimes at a rapid trot; they frequently drive them with three horses instead of two. Formerly, I think, they used to move at a foot's pace, but now that pace has materially increased, and whenever they get an opportunity in the City, which is not very often certainly, of moving faster than a foot's pace, they start at a trot, and at the corners it is exceedingly dangerous; I think some regulation might be made with regard to that. It is proposed to give powers to the Court of Aldermen under this Bill to restrict the pace at which those railway vans shall travel.

343. *Chairman.*] You do not mean to say that those fast vans that travel at an accelerated pace are solely railway vans; there are other vans, are there not, employed in the various trades of the City of London which are equally driven at a fast pace, and thereby incur the same risks?—There are somewhat similar vehicles, but I think they are of a different description from the railway vans. The railway vans are principally those in which three horses are used; they are vans carrying goods from and to the railways chiefly, and distributing them at different places of business in the City.

344. Mr. *Gathorne Hardy.*] And from their weight, they are not easily pulled up, are they?—No, their weight prevents their being so easily pulled up; that is one reason why it is proposed in the Bill to limit the age at which people shall be authorised to drive these heavy vans. I have seen more than one accident happen from the inability of the driver to pull up a van going at quite a slow pace; in fact, a fatal accident occurred near the Mansion House from that very cause quite recently.

345. And I am sorry to say that accidents of that kind happen outside the City also?—I should think they happen more frequently outside the City than within it.

346. Mr. Alderman *Lawrence.*] Therefore you think, considering the narrowness of the streets in the City, that those railway vans ought to be limited as to their width, and limited as to the height to which they should be loaded?—Yes, and I think that they should be limited as to the hours in which they should occupy the streets; and that the chief value of the proposed Bill will materially depend upon what regulations are made with respect to these vans.

347. I think you quite agree that the pace should be limited in order to secure the safety of foot passengers?—Yes; but I think that is more essential outside the City than within it; I think that the danger to foot passengers of accidents from vehicles of all kinds is much greater outside the City than within it: in fact, if I may give my opinion, the distinction between the traffic in the City and the traffic outside is this, so far at least as foot passengers are concerned, that beyond the City boundary, vehicles are driven too rapidly for safety, whereas within it they are too frequently unable to move at all.

348. Do you think it necessary, considering the character of those vehicles, that the persons driving them should not be mere lads, but persons of a certain age?—Quite so.

349. Do you agree with the evidence you heard Sir Richard Mayne give the other day, that a lad of 15 or 16 years of age was quite as capable of managing one of those heavy vehicles as a man of 20 or 21 years of age?—No; I think a lad of that age would be found probably, in most instances, physically incapable of restraining three horses in a heavy laden van.

350. Do you think that one of those vehicles ought to be left in the charge of a young lad of, perhaps, 12 or 13 years of age, in any of the streets of the City or out of the City?—I think the danger of so leaving a van would be greater out of the City than within the City, from the very fact that it is so difficult for a horse to run away with a vehicle in the crowded streets of the City. I think very few accidents arise from that cause in the City, so far as my experience goes.

351. I believe those vehicles in the City, that are standing at the sides of any of the streets are often required by the police to move from the spots where they are standing, to permit the traffic to go by?—Constantly; that happens every hour of the day.

352. Therefore I believe it is provided in this Bill that those vehicles shall not be left in charge of persons incompetent to move them?—Yes.

353. Do you not believe that those regulations that are provided for in this Bill, with respect to those vehicles, are of great importance?—I think they are quite necessary.

354. Will you state the reason for regulating the height to which vans and wagons are loaded. Sir Richard Mayne, the other day, stated that he could see no reason in the regulation. Perhaps you can explain it?—One of the reasons for limiting the height of vehicles, under the bye-law which was made in 1863, to 16 feet, was this: that it was found that unless they were so limited, no vehicle laden above that height, could enter the City through Temple Bar, and the limit was really fixed, I think, in consequence of that. It was proposed to allow them to be laden to a height of 17 or 18 feet. On more than one occasion since this rule has been in operation, although vehicles infringing it have been summoned and fined afterwards, a load has been upset in the streets causing considerable danger as well as being an effectual obstruction to the traffic at the time, entirely owing to its being loaded to too great a height.

355. Is not there another question as to the

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hop wagons, arising from the ropes getting shifted, and also the danger in turning into the narrow streets?—Yes.

356. Difficulties have arisen on that subject, have they not?—Yes, they are constantly arising, even now, with the height to which they are now limited.

357. Therefore you think that a regulation is necessary upon that point?—Yes.

358. Will you state the number of summonses that have been taken out for furious driving in the City; we have seen what it is in the metropolitan district?—I have a return here of the number of summonses that were taken out by the City police against drivers and conductors of vehicles, and others, for offences which tended to impede the free passage of the public thoroughfares of the City during the year 1865. They amounted to 3,958; and I see that the number of persons summoned for what is called careless or dangerous driving was 199. But I would impress upon the Committee the fact, that that has really reference more to careless driving than to what is called furious driving. People cause obstructions by careless driving and impeding crossings; for instance, a person blocking a thoroughfare would be summoned for careless driving, an obstruction being the result of that careless driving; but although 3,958 people were summoned, and the majority of them were fined for committing those offences, I may say that they were not, in all probability, a tenth part of the number who might very properly have been summoned; those are really the worst cases that have been selected.

359. Am I to understand that those are for careless and furious driving, irrespective of the summonses for delays and other matters?—No; those are the summonses taken out by the City police against drivers, conductors, &c., of vehicles, and others, for offences that tended to impede the free passage of the public thoroughfares of the City during the year 1865; 199 persons were summoned for careless or dangerous driving out of the total number of 3,958.

360. Sir Richard Mayne stated, I think, that the cattle being prevented from being brought by railway to the Metropolitain Market, and other places, had relieved the traffic in the metropolitan districts; but has not that caused an extra number of butchers' carts coming to the dead meat markets in the City, in consequence of the restriction upon moving cattle?—Yes, the number of those carts has been very materially increased since there has been a prohibition against cattle being removed by railway.

361. I think you are acquainted with the traffic generally out of the City, as well as in the City; do you at all believe that you can find any spot in this metropolis where so much traffic converges to one spot as that opposite to the Mansion House?—I have never noticed any spot I think within the metropolis where such an enormous concentration of traffic takes place as at that spot. I think there are no less than seven thoroughfares opening into it; it is at the junctions and the intersections of streets, that the dangers to foot passengers really occur.

362. Mr. *Gathorne Hardy.*] Assuming that the markets in the City and its being the centre of business are an attraction to enormous crowds, both of vehicles and persons on foot, still as I understand you, your main difficulty is in regulating the thoroughfares approaching the City?—The thoroughfares of the City itself.

363. Approaching those centres?—Yes.

364. Have you any other reason for fixing the particular limit of the City as the place where the thoroughfares require to be regulated, except the separate jurisdiction?—I think that the thoroughfares of the City are so much narrower than the thoroughfares of the metropolis, that special legislation is requisite for them which is not requisite for the others.

365. I assume that whenever a town is put under regulations, the bye-laws must apply with greater force in certain parts of that town than they do in the town generally. Except at Temple Bar, there is no barrier between the City and the metropolis, is there?—Temple Bar can hardly be called a barrier.

366. There is no distinction whatever, then?—There is nothing to define the line where the City begins and the metropolitan district ends.

367. Have you any reason for fixing the particular limit, say, in Holborn or Chancery-lane, where your duty of regulating the thoroughfares begins, as making it important to regulate one part of those thoroughfares specially, and not the other, except that the City jurisdiction commences at that place?—Yes, this reason: that the streets of the City proper are obstructed by vehicles and by a particular business, of which the people in the metropolis round it have no knowledge.

368. I want to know why, as the whole of Chancery-lane receives the same sort of traffic, that part of it which is under your care should require special legislation which the other part of Chancery-lane does not require?—Because the part of Chancery-lane which is in my jurisdiction opens into a very crowded thoroughfare close to Temple Bar, and comes in just at that part of Fleet-street where it is narrowest.

369. Then at that corner you require more police, or some precaution of that sort?—Yes.

370. You then go up Chancery-lane, and come to that place where you are on the confines of the metropolis?—Yes.

371. What difference is there between the regulations required at that spot for the City and those required for the metropolis?—At that spot there is none.

372. Then you fix on that boundary of the City as being the place where special regulations and a special Act shall apply, in fact, simply because that is where a separate municipal jurisdiction begins?—Certainly. I suppose the City would not have thought of promoting this Bill, if they had not discovered that within their own jurisdiction there was a necessity for doing something.

373. In the metropolis, also, they may require more especial care at points where they join your great streams of traffic than they do in other parts, may they not?—I hardly think that they do, for this reason, that the width of all the streets entering the City really regulates the traffic of itself.

374. In some places they actually divide the same street with you, do they not?—They do at all the approaches, in fact.

375. Therefore the streets are as wide on your side as they are on theirs, are they not?—No.

376. Just at those points where you join, they are?—Take, for example, the boundary we have been

been just referring to, Temple Bar. Temple Bar is really the neck of a bottle.

377. I avoided Temple Bar for that reason?—At the entrance to the City at Holborn, through what is called Holborn Bars, there is a very narrow neck dividing, in fact, the metropolitan district from the City; and at the City end, exactly at the confines of the two jurisdictions, it opens suddenly into a very wide street, a street four times the width of the street by which the traffic approaches the City. I will take again the bridges; say London Bridge, for example. A good deal of the traffic upon London Bridge comes up from Tooley-street, for instance, which is a narrow street. The vehicles which approach the City from that street are almost all heavily laden, and an ascent occurs just where the the City begins, that is immediately at the end of London Bridge, where too the street is four times the width of Tooley-street. I think that is another instance showing why it is sometimes necessary to make special regulations immediately on the confines of the City.

378. That is just what I wanted to come to. Whatever general rules you lay down, I understand that you think those general rules might be made applicable as well to the whole metropolis, I mean to the whole of the street part of the metropolis, as to the City?—Not all of them; I think some might very advantageously.

379. Then, supposing that you have a special Act for the City, whatever bye-laws you make in the City, you must make certain of those bye-laws applicable to particular portions of the City, and others to other portions; they would not be uniformly applicable to every part of the City?—I think some of them would be applicable to every part of the City.

380. And some of them would not?—Some of them would not.

381. Mr. Alderman *Lawrence.*] The Act mentions certain streets to which special regulations shall apply, does it not?—Yes.

382. Mr. *Gathorne Hardy.*] What difficulty would there be, then, in having a general Act for the whole metropolis, with the power of making special bye-laws for the special circumstances of each case both in the metropolis and in the City?—I do not see that there would be any difficulty at all if the bye-laws were made by the same authority, upon the recommendation of somebody who was familiar with the subject; but I think it would be preferable that every rule or regulation made applicable to the whole metropolis should, if possible, be made by positive enactment.

383. Still there would be something required beyond that, both in the metropolis and in the City, for the special circumstances of particular localities, and also for the special events that might happen, and which might require special care?—Yes.

384. Then I come back to the old question, Is there any particular reason why you should pick out for legislation a piece of the metropolis which is the City, except that it has a separate jurisdiction of its own?—No, I do not see any reason for the difference at all.

385. I will just ask you one further question, which is of a more limited character. You spoke of regulating the hours for the railway vans, and so on; is not there a difficulty in making such a regulation in the City that might not exist in other parts of the metropolis, from this cause, that, in consequence of the dearness of ground in the City, the railway stations would become choked with the produce brought from the country to them, unless they had a considerable time for carting it and getting it away?—No, I do not think the difficulties would arise at the railway termini. The difficulties are caused by vehicles stopping in the streets and not moving on. The only serious difficulty one has to contend with in the City is from vehicles standing still. So long as you can get vehicles to keep in motion, however slowly, the difficulty is comparatively trifling, except when the whole traffic is impeded at the ends of streets. The Committee might wish to know what the condition of the streets in the City really is; I mean as regards the numbers of streets and the widths of them.

386. You mentioned, I think, that on one particular day, as long ago as 1860, as many as 50,000 vehicles came into the City?—Yes. I am not now speaking of the number of vehicles. There are in the City altogether 440 streets, of which 101 are really not thoroughfares at all; they are streets and lanes having no exit. There are 111 through which only one line of vehicles can pass. The consequence is that any vehicle, even a wheelbarrow, stopping in one of those streets, in fact, deprives anybody of the power of passing through it. There are 101 through which there is only room for two lines of vehicles to pass; and the consequence of that is, that any vehicle standing still for one minute in any of those streets (and some of them are the busiest of all the streets in the City) interferes altogether with the progress of one line of traffic, and it is therefore necessary to put a policeman there to check it immediately. Of the whole number there are only 70 through which there is room for more than two lines of vehicles to pass at a time for the entire length. I think that shows the necessity of distributing the traffic over a larger number of hours than at present.

387. And for bye-laws specially relating to to those localities?—Yes.

388. As far as the authority that is to make those bye-laws is concerned, that you think a question of minor importance, so long as they are made?—I think it is of no importance whatever.

389. Mr. *Labouchere.*] With regard to the question put by the honourable Member for the University of Oxford, as to why there should be a special jurisdiction for the City traffic, is it not the case that the Bank is the centre of the City; so that the nearer you approach to the Bank, in the City, the greater the traffic becomes, and in like manner the City is the centre of London; so that the traffic converges to the City, and becomes greater the nearer you approach the City; therefore, that would be one reason why it would be more difficult to regulate the traffic the nearer you get to the Bank, would it not?—Yes, that is one reason; and another is that, in addition to the traffic pouring in from all sides towards this centre, the streets become narrower just there.

390. It is like a sort of funnel as you approach the Bank, is it not?—It is like a number of funnels converging upon one spot.

391. Would there be any great difficulty in devoting one main line from the West End to the City, exclusively to the use of the quick traffic?—I cannot see that there would be any advantage in it; in fact, it would be impracticable, I think

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I think, unless you had a parallel line to take the slow traffic.

392. Is it necessary that the slow traffic should pass along the Poultry and Fleet-street?—In the Poultry and Cheapside one of the great difficulties, one of the impediments to the traffic, is the cross traffic between King-street and Queen-street, particularly since the opening of Southwark Bridge; Queen-street is a very crowded thoroughfare having room for only two lines of traffic, and it crosses Cheapside at right angles. There is of course a constant stream of traffic passing down Cheapside to and from the Bank, and that is constantly impeded by the cross traffic between King-street and Queen-street. Otherwise, I do not think there would be any practical difficulty in getting the traffic through Cheapside; it must go at a comparatively slow rate, certainly, in consequence of the enormous number of vehicles; but I do not think there would be any special advantage in keeping out all the heavy traffic in the present condition of things, because the difficulty I speak of now really forces all the traffic to walk as it is.

393. In the Poultry the pace is generally a walk?—Of necessity it is, because the Poultry is narrower than the rest of Cheapside. It gets narrower down towards the Mansion House, and it is only of sufficient width there to take, I think, two, or perhaps three, lines of vehicles of a moderate size.

394. By excluding the slow traffic you could reduce the traffic to two or three lines, could you not?—I do not see what you could do with the slow traffic, or what other streets you could appropriate to it.

395. It would be necessary to make another street, in fact?—Yes, or very considerably to widen the existing street.

396. Now, to pass to another subject. There are more policemen employed in the City at crossings, comparatively speaking, than in the rest of the metropolis, are there not?—From what I heard Sir Richard Mayne say the other day, I think that there must be a much larger number of policemen so employed in the City than in the whole metropolis; not comparatively speaking, but actually.

397. And you consider, do you not, that the employment of policemen at crossings limits the number of accidents considerably, and obviates the necessity of making subways or bridges?—Yes, I think that the multiplication of those resting places, and the employment of police at the intersections of streets and at the junctions of streets would be found to be the only practicable way of diminishing the number of accidents which occur in the streets of the metropolis. I think that the proposal for subways or bridges, if it is ever carried out, which I very much doubt, would be found to be almost useless. I have heard a great many suggestions for making subways and bridges, but I never heard any practical suggestion as to the mode in which they should be made. It would be necessary, it seems to me, as a matter of course, to occupy the houses on each side for approaches.

398. There is a provision in the Bill, I see, for that?—There is a provision, giving the power to the Commissioners of Sewers with the consent of the Court of Common Council, if they please, to make subways or bridges. It seems to me that the expense in the first place, of making the subways or bridges would be enormous, and if they were made, I doubt very much whether they would be generally used by the public. Certainly, I think they would not in the narrow streets where nobody would care very much to go up 20 feet in order to cross over 10 feet. I think they would be found great nuisances; it would be necessary, certainly, to have policemen constantly in them, and I believe that all the difficulties would be overcome, and quite as great advantages would arise from the employment of policemen at crossings and intersections of streets, as is the case now in the City. I have here a sketch (*producing the same*) showing how many lines of traffic are in motion at the same time at the intersection of only two streets. It is not uncommon, I think, to suppose that there are only four lines of traffic to be dealt with at the intersection of two streets, whereas there are literally twelve. And it becomes essentially necessary at those places, to have something to check the approach of fast vehicles, to break the traffic and to check it alternately. In a case like that of the space in front of the Mansion House, where there are no less than seven streets opening, there are as many as 35 different lines of traffic, all in motion at the same time. I mean that there are 35 distinct lines of traffic, to say nothing of empty cabs and vehicles which have no destination, crawling round and round that particular space all day long.

399. Sir *William Russell.*] You stated, I think, that the difficulty in the City arose from the slow pace of the traffic; the difficulty is to increase the pace of the traffic in the City, is it not?—The difficulty is to get it along at all; in some places it is constanly stopped by obstructions of all kinds.

400. The difficulty out of the City, in the metropolitan district, would be to decrease the pace, would it not?—Yes; you are speaking, I presume, as regards danger to foot passengers.

401. Do you think that any interference by regulations or by the police could really relieve the present slow rate of traffic in the City; could anything do it to any great extent, except the widening of the streets?—Yes; I think a material relief might be given to it by certain regulations. The most effectual relief would be, I think, to give a much greater width to the streets; but, failing that, I think that regulations might be made which would facilitate the traffic in the City.

402. Would it be possible to remove the heavy traffic from the City by any regulations, without seriously interfering with the trade?—I fancy that any regulation so made, must affect individuals more or less; there can be no doubt of that. But I cannot believe that those difficulties are insuperable. As an example of what I mean, I will mention what has been done in the meat trade. You may take it that at this moment the meat trade of London is really all carried on, and got over, at least the greater portion of it, before nine o'clock in the morning. The whole of the meat that is used in London, and for many miles round, is conveyed to Newgate market, which is in the heart of a mass of narrow lanes and passages, and is a place most difficult to approach, and thence it is all redistributed again throughout London. As I say, at this moment, the greater part of that is managed before nine o'clock in the morning. Therefore, I think, that if one large trade can do so much,

other

other trades also might fairly be called upon to submit to some inconvenience.

403. Is not that meat traffic, which you allude to, so rapidly got through, in consequence of the very necessities of the meat trade itself requiring that the butchers must have it before a certain time, in order to distribute it in London?—No.

404. It is not the result of any special police regulations, but the result of the necessities of the trade itself, is not it?—If it were not for the regulations enforced every day by the police it would not be distributed at all. It is really by the stringent regulations enforced by the police every morning in facilitating the approach of the railway vans which bring it, and in facilitating the access and egress of the carts that carry it away throughout London, that it is distributed at all. I believe that if the police were not employed there, the people in the distant parts of London would be without meat altogether.

405. You stated just now, did you not, that fish are coming into London all day long, and that you cannot prevent the traffic arising from that?—That is so.

406. Would it not be a great hardship to have the trade stopped during the day, because, of course, if the dealers in fish were not allowed to sell it after nine o'clock in the day, the fish left unsold then could not be sold until the next morning, when it would be no longer fresh?—We do not propose to stop the fish trade, nor, in fact, the trade in any other perishable article. I think that there should be some relaxation made in any regulation that applies to this matter, in favour of such trades. But I was speaking more of vehicles which stand to load and unload in the busy narrow streets of the City, which are really the cause of obstructions that take place constantly.

407. Do you think that you might compel all those large warehouses to work at night and to load and unload then, and get rid of that obstruction by their working at night instead of working in the day?—I think a great deal of what is now done in the day might be done in the early hours of the morning and after a certain hour in the evening. I do not say that it would be necessary to compel persons altogether to work at night, but I think much more might be done then than is now done.

408. Are you of opinion, then, that it is desirable to have much interference by police regulations with the general traffic; do you not think that that interference ought to be restricted to the very minimum that is possible?—Yes; I think it ought to be restricted to the minimum. I think it would be better, if possible, that the traffic should regulate itself; but the streets, certainly, do not admit of that, and, therefore, it is essential that some police regulations should be made, not only for the safety of the public generally, but for the convenience of the people interested in the traffic themselves.

409. With reference to the difference between the traffic in the City, and the traffic carried on outside of it, is not it essential, in order to harmonise that traffic, that almost similar regulations to those existing in the City should be made on the frontiers of the City, even if they become easier as you get farther away from the City; and is not it essential that the same authority and the same Act should cover not only the City but the metropolis?—I think that many of the same rules would be advantageously carried out at all the approaches to the City. I think it is immaterial who makes the rules so long as they are made. And there is no doubt that a number of the very regulations which occur to me at this moment might be advantageously put in force at the immediate approaches to the City. Take, for instance, that one which I have been describing, the entrance to Holborn in a narrow street near Middle-row; I see that street constantly obstructed with vehicles standing there, brewers' waggons, coal waggons, and others, standing for almost any length of time, and they materially impede the progress of the vehicles into and out of the City.

410. Would it not be the case, for instance, if there were an Act stating that no cattle should enter the city after eight o'clock in the morning, that they might accumulate in large numbers outside Temple Bar, if that Act did not extend beyond Temple Bar, so as to prevent their entering the metropolitan district?—I do not think that could happen with cattle, because cattle are required to travel by certain routes mutually arranged by the two Commissioners of Police.

411. If you said that railway vans should not enter the City after 8 o'clock in the morning, and if that regulation did not extend to the whole metropolis, might it not be possible that the railway vans might arrive at Temple Bar at half-past eight o'clock, and you might have an accumulation of them there, owing to there being no regulations of a similar character in the rest of the metropolis; and there might be a complete block?—I am not suggesting that they should not be allowed to enter at Temple Bar, or to enter the City at all. My suggestion applies to their not stopping in the streets of the City when they get there, and so obstructing and stopping the whole of the traffic during the business hours of the day. I do not see much difficulty in dealing with traffic so long as it keeps in motion.

412. Is not it necessary that the same regulations, or regulations in harmony with one another, and made by the same authority, in order that they may absolutely harmonise with one another, should be made both for the City, and for that part of the metropolis, which is outside the City?—Yes; I do not see any difficulty in regulations being made which shall harmonise with one another; and so long as the necessary regulations are made, it seems to me to be immaterial by whom they are made.

413. Would it not be better that those regulations for the City should be made by some authority, such as the Secretary of State, independent altogether of the Court of Aldermen or the City authorities?—I certainly think it would be advantageous that they should be made by independent authorities, that is to say, by persons who cannot be supposed to have any interest one way or the other.

414. Is it not the fact that even under the present regulations there is a great obstruction, at the present time, at Mr. Bennett's exhibition in the City, and that the authority that could remove that obstruction does not remove it?—The simple difficulty about that is that there is no clause in the City Police Act which deals with obstructions upon the pavement, and it is, therefore, proposed by this Bill to give that power. The particular obstruction to which you refer is really unimportant. It creates an assemblage of a dozen people, perhaps, upon the foot pavement when

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when the clock is going to strike; but there are other obstructions of much greater magnitude than that with which it is proposed to deal by this Bill.

415. Is not it the fact that the Court of Aldermen have sufficient authority, if they chose to use it, to deal with that obstruction, but that they do not choose to use it?—The Court of Aldermen have no power whatever; the only power to make regulations in the City is given to the Commissioner of Police under the Police Act, and there is nothing in that Act which gives myself, or the Court of Aldermen, power to deal with such a case as you mention. There is nothing in the Police Act relating to obstructions upon the pavements caused by people standing there. It is the fact (and this applies also to the foot pavements of the metropolis Sir Richard Mayne referred to the other day,) that at this moment the streets of the City are invaded, and the foot pavements completely blocked by an army of betting men; indeed, on one occasion lately as many as two thousand of them were counted in one street, and there really is no power under the City Police Act to deal with an evil of that kind except by a roundabout process. There is no summary power at all. The clause in the Police Act relating to obstructions on the foot pavements applies to articles being sold and to articles overhanging the foot pavements. It does not deal with obstructions of this sort. I may observe that it is quite a mistake to suppose that a policeman has the power to go up to anybody in the street and say, "move on;" he has no such power.

416. With regard to bridges and subways, you do not think that they are practicable, in fact?—Of course it would be practicable to make them, but I do not see any way in which either the one or the other could be made, except by taking possession of the houses on each side of the street where it is necessary to make one. I believe, too, that they would be very little used by the public generally, and it would be found that they were public nuisances, and that they were used for other purposes than those for which they were intended. It would be essentially necessary, therefore, to have police stationed in every one of them.

417. Do you not consider that the powers sought by this Act are very much stronger than are either advisable or that there can be any necessity for?—No; on the contrary, I think some of them are not sufficiently stringent to deal with the difficulties that exist in the City now.

418. *Chairman.*] I think I understood you to say that the greatest difficulty of all, in your opinion, with regard to the City of London, is the stopping traffic?—That is really the chief difficulty just now.

419. You say that there are streets of warehouses throughout the City of London at which there are constantly goods either being embarked to go away, or arriving by vans to be taken into those warehouses; and to take, for example, the case of Cannon-street, although it is a fine street to look at, the space for traffic is so narrowed by these stopping vans, that it is rendered practically a narrow street from that circumstance?—That is so.

420. You spoke of the great inconvenience arising from some of the markets, especially Billingsgate-market, which goes on during the whole day now, the fish not arriving, as it used to do formerly, betimes in the morning, but coming all day long from the various railway stations through the metropolis. Do you think, with regard to that market generally, and with regard to Newgate-market also, that the traffic within the City of London can ever be regulated as it should be while those two markets exist?—I think that the traffic of London will never be regulated as it should be in the present condition of the streets; but I think that those markets, although they increase the difficulties, do not altogether prevent a great improvement being made in the conduct of the traffic of the City, under certain regulations, which I think might be made under the Bill that the City has promoted.

421. Do you think that either Billingsgate Market or Newgate Market is sufficient, as it at present stands, for the trade carried on in those markets respectively?—Neither the one nor the other; they are both most inconveniently situated, and they are both inadequate to the requirements of the metropolis.

422. Does not the market at Billingsgate, going on as you have stated all day long, and causing a constant difficulty, as you have described, in regulating the traffic, absolutely interfere with the traffic which is essential to the general trade of the City of London?—No doubt it does, because Billingsgate Market is situated in the particular quarter where a great deal of the traffic of the City is constantly going on, near Thames-street, and Tower-street, and that neighbourhood.

423. Notwithstanding the Underground Railway and other circumstances which were supposed a year or two ago, in fact, only a year ago, to be likely very much to decrease the traffic in the streets, you find that it still increases, and that there are various other causes, such as the opening of Southwark Bridge, that tend also to increase the traffic within the City?—Yes.

424. And you find that no diminution really has occurred in consequence of any of those improvements which have taken place?—No; on the contrary, I think that the number of persons, and the traffic generally, have increased, notwithstanding those supposed improvements.

425. The competition by the boats on the Thames, and the competition by the omnibuses and the cheapening of the means of transit to the City, tend daily to increase the difficulties which exist there already?—That is so.

426. You mentioned empty cabs as being one of the nuisances. Is not that plying in the way you spoke of, an offence under the Hackney Carriage Act?—Yes, illegally plying for hire elsewhere than at a place appointed under the Act, is an offence, for which cabmen in the City are constantly summoned. But the difficulty is very great indeed, not only in the City, but in London generally, on account of the circumstance that there are not a sufficient number of cabstands in the City, and it is impossible to provide them: the space will not admit of it. The consequence is, that an enormous number of cabs come into the City in the morning with passengers; they put down their passengers in the neighbourhood of the Bank, or in the crowded parts of the City, and then hang about, being unable to find a place upon the stands, in hopes of finding a return fare. They go out of the City towards the middle of the day, and return in the afternoon. You may see numbers of those empty cabs any afternoon pouring through Temple Bar,

Bar, and all moving upon the same point, in the hope of getting passengers to take out. They are a source of obstruction constantly, because they not only crawl about the streets of the City, and so impede the course of the traffic, but whenever they get a fare, they turn round in a crowded street and stop the traffic altogether until the horse's head is in the direction the man wishes to go.

427. In the City the absolute impossibility of allotting to them stands makes that a still greater difficulty than it otherwise would be, does it not?—Yes.

428. And greater than it probably is in the metropolitan district?—In the metropolitan district, from the width of the streets and the greater area over which these cabs can crawl, the inconvenience is not so much felt; although, from my own observation, I think, that they do create great difficulties, and are the cause of some danger to the inhabitants generally. But I do not think it is felt as an obstruction nearly so much out of the City as within, from the circumstance that they collect in hundreds every day there in a more limited space.

429. You mentioned, I think, that you had summoned a large number of these cabmen for the offence, and had found difficulty in getting them convicted?—No; there is no difficulty, I think, in getting them convicted. The magistrates of the City, of course, as there are so many of them, have different opinions upon the enormity of the offence which a cabman commits, and therefore, the fines vary in amount; but there is no difficulty in getting a man convicted; I never found any.

430. Mr. Alderman *Lawrence.*] Do you apprehend that if these special regulations were made for the City, they would in any way cause obstructions or difficulties outside the City itself?—I see no necessity for their causing any.

431. You apprehend that no difficulty would arise in the metropolitan police district, in consequence of the special regulations being made for the City of London?—No; I conceive that regulations might be made which would not be the cause of any obstructions without the City.

432. I believe there is the most perfect harmony in every respect between yourself and your department and the Chief Commissioner of Police for the metropolis?—Perfect. On all occasions, the Commissioner of the Metropolitan Police has given me every assistance in his power, and it has been necessary on occasions when the traffic of the City has been entirely stopped, on occasions of processions and important meetings, to seek the assistance of the metropolitan police within the City, which has always been rendered at once and very cordially.

433. Therefore, any idea of the police in the two districts jarring, is quite imaginary, is it not?—At present, there is certainly no danger of it.

434. Have you not, ever since you have been the Commissioner of Police for the City, been urging upon the authorities of the City to endeavour to get power to make regulations for the traffic of the City?—Yes; I urged it upon the Court of Aldermen immediately upon my obtaining the office which I am now holding. I represented to them the difficulties of the traffic generally, and urged upon them the necessity of trying to get power to mitigate the evils which were apparent to everybody, and the result of that I think was, that the Bill of 1863 was promoted by the City, and it is in consequence I think of a letter which I addressed to a special committee appointed by the Court of Common Council, that the second Bill has now been promoted by the City, with the view of obtaining the powers which the first Bill was found not to include.

435. And in consequence of your requests and representations of the urgency of the matter, the Police Committee granted you 50 more policemen to carry out your instructions, did they not?—They did so, and I think an improvement is apparent already in consequence of those men being there.

436. They have been ready at all times to meet your recommendations and requirements when they were made, and they have increased the pay of your force in the City of London with your concurrence, have they not?—Entirely; and they have been ready at all times to forward my views. Every suggestion I have made has been readily acceded to.

437. With regard to making regulations for the traffic of the metropolis, I apprehend that, as to the questions you have been asked relative to the boundary of the City of London and the immediate neighbourhood, you would say that there should be some boundary for regulations, comprising a much smaller area than the whole metropolitan police district?—Necessarily, because the great traffic of the metropolis converges upon this one point, and that is my reason for thinking that some special regulations would be particularly applicable to that spot.

438. And wherever that boundary might be fixed there would be the same argument derived from its cutting into a street of equal width, above and below the division; and being a boundary drawn, as it were, over spots where the reason for drawing such a boundary line, just where it was, and not at all on one side or the other, would not be apparent?—Of course, you may draw an imaginary line anywhere, and the difficulty would only begin probably at a particular spot within it.

439. You have under your command, I believe, a much larger force in proportion to the area occupied by the City of London than there is in the metropolitan district, under the control of the Chief Commissioner?—Yes, I think so.

440. Therefore, you would be enabled to carry out any special regulations or special orders under an Act of Parliament most easily?—I do not think that many of those regulations which are proposed by the City Act to be carried out, could be carried out in the metropolitan district without a material increase to the strength of the metropolitan police force.

441. In addition to the other matters that have been alluded to, namely, the markets, the receiving houses, the railway stations, the Bank of England, the Royal Exchange, and the large mercantile establishments, the large banks and warehouses, and establishments of that kind in the City, I believe you have now three bridges open to the public, there being only one open bridge for the rest of the metropolis, from Blackfriars Bridge up even to Richmond?—The three bridges that are within the City are all free, namely, Blackfriars Bridge, Southwark Bridge, and London Bridge; those are the only three bridges that are within the City.

442. There has been an allusion made to cabs, and particularly to empty cabs, and to the regulations respecting them; is it not your opinion that

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that the whole system of licensing and regulating cabs throughout this metropolis might be put upon a footing which would insure to the inhabitants better vehicles and keep them under better arrangements than they are at present?—I am hardly prepared to answer that question. It seemed to me, from what Sir Richard Mayne stated the other day, that his difficulty arose from there being a variety of authorities, and I rather gathered, from what he said, that if he had the whole management of it himself he could make a considerable improvement, but that there were other people to be consulted.

443. I will allude to one matter relating to this subject. I believe the various railway companies think it necessary for them to license special cabs to come into their termini, and from them they exact a weekly or an annual sum for that privilege. I believe that in some cases it is a payment each time they enter?—I have no knowledge as to what the payment is, or as to whether there is any payment or not, but I know that the railway companies do license certain cabs to come upon their own private ground; those are in fact private cab-stands. There has recently been one opened at the terminus at Moorgate-street, upon a piece of ground which the company have purchased, and which belongs to them. At London Bridge Station it is the same, and at the Blackwall Railway the same thing occurs. They are, in fact, private cab-stands, and are not regulated at all by the general rules.

444. Is not the effect of these arrangements to cause a larger amount of traffic than would otherwise be caused; for example, a cab licensed by the Great Western Railway Company, after taking passengers to London Bridge Station, would be prevented from entering that station to take passengers out of the station, but must go back empty to the Great Western Station to obtain passengers, unless it can pick up passengers on its way?—That cab, although it is licensed by the Great Western Company to stand upon their private stand, would also have the privilege of going to the nearest cab stand and taking a fare from there.

445. You misunderstand my question; a cab coming from the Great Western Railway with a fare to the London Bridge Terminus, would be prevented by the Brighton Company or the South Eastern Company from entering their private stand, would it not?—Yes, from standing there.

446. It must go away empty somewhere?—Yes.

447. And it is bound by the Railway Company's regulations to return to Paddington in time for certain trains at the Great Western Station, and although other cabs may have come from the London Bridge Station to the Great Western Station, they must return to the London Bridge Terminus, not being permitted to enter the Great Western Company's private cab stand there?—Yes; to some extent, I think, that affects the traffic of the City, but not materially, because the London Bridge Station is without the City, and there is no necessity, for an empty cab to come into the City at all. I have no doubt that it tends to increase the traffic in the City, but not to any material extent.

448. Have any representations been made to you by the Chief Commissioner of the Metropolitan Police of inconvenience being caused in the metropolitan district by cattle driven through the City of London?—I have never had any representations made to me of that kind.

449. During the time you have held your office you have had no representations made to you by the Chief Commissioner of Metropolitan Police, or by inspectors under him, as to the difficulties caused in the metropolitan district by cattle being permitted to pass through the City at hours at which they are not permitted to be driven in the metropolitan district?—No; I have not had any representations whatever made to me; but I think Sir Richard Mayne himself stated that the rules which are published in regard to the hours during which cattle may be driven through the streets are not enforced, and that although the rules specify that no cattle shall be driven after 10 o'clock in the morning, practically that regulation is not enforced until 12 o'clock; and the consequence is this, that any cattle that are on the confines of the City at 10 o'clock or 12 o'clock, or whatever the hour is that this regulation of Sir Richard Mayne applies to, come into the City at that hour, and there is no getting rid of them except by driving them again into the metropolitan district. That being so, as they have to pass through the whole of the City before they arrive at the opposite verge of the metropolitan district, they must be infringing the orders of the Metropolitan Police Commissioner on the other side, because they arrive there, of necessity, at an hour later than that at which he permits them to pass.

450. I suppose, practically, the number of cattle passing through the City between those hours is something very small indeed?—Calves and sheep are driven in numbers to Newgate Market, and occasionally they cause very great obstruction. I think it would be very desirable that there should be some prohibition of the driving of cattle in the busy hours in the City. Newgate-street I have frequently myself found to be quite obstructed by the sheep going to be slaughtered in Newgate Market, and by droves of bullocks. The old orders, which are still in force, limit the number of bullocks in a drove to 10, when there is only one drover, and to 20, when there are two drovers; 50 is the number of sheep that may be driven by one drover. But half-a-dozen bullocks in a narrow street cause a serious obstruction.

451. Will you explain to the Committee the intention of that clause, which I believe was put into the Bill by your recommendation, as to jostling and loitering in the streets by foot passengers?—I may mention that that clause is extracted from an Act of Parliament which is already in operation; and, in fact, all those clauses, or most of them, relating to obstructions on the foot pavements, and other minor details, are extracted from Acts which are now in force in Manchester, Liverpool, Edinburgh, and other places. They are clauses to which Parliament has made no objection before. I fancy they operate beneficially, because they have been introduced into different Acts of Parliament in succession.

452. You have not stated the hour from which Newgate Market is open in the morning, for how many hours it is open, or the steps you have taken to regulate the traffic in the street, and to cause it to be finished by nine o'clock; at what time does it commence in the morning?—This is an exceptional time. I think the mistake is, that they do not commence their operations at Newgate

gate Market sufficiently early, or we should get rid of the difficulty more easily than we do now. The street at this moment, by a recent regulation that the Lord Mayor has made, and which has been posted up, is closed to traffic between two in the morning and nine o'clock, for the purpose of enabling meat to be brought to Newgate Market more easily, and afterwards redistributed throughout London. On other occasions it has been customary to allow the traffic to pass through the streets. But now the whole of the meat having to be brought by vans to Newgate Market dead, and afterwards redistributed, special police arrangements are absolutely necessary, because there are sometimes as many as a thousand empty carts standing in the streets waiting to carry away this meat from Newgate Market in the morning, and Smithfield and the Old Bailey, and all the streets adjacent, are crowded with them.

453. The barrows have been alluded to; with regard to the selling in the streets, will you give the Committee your opinion as to the trucks and barrows in the streets of the City?—They are a constant source of difficulty. At this moment some of the streets in the City are more like a fair, from the numerous costermongers and sellers of fruit and vegetables, in fact, every description of article is sold in the streets; and the difficulty of preventing it is this, that you cannot summon persons for selling articles in the street, but simply when they create an obstruction, and it is necessary to prove the obstruction in each case. I have complaints from the inhabitants of the City, almost daily complaints of the nuisance which these people create, and of the impediment to business which arises from their constant presence.

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454. In this Bill, by your advice, there are special streets indicated, are there not, where they would not be permitted?—Yes, where they would be prohibited between certain hours.

455. Do you think that that regulation will materially assist the traffic in the City?—I think if it is enforced it will help to facilitate the traffic very much. In fact, anything you can get out of the streets, within certain hours, will have that effect.

456. We may take it to be your opinion, that although the requirements in the Bill are such as you consider necessary for the City of London, yet some of them might with advantage be used in the district beyond the City of London?—I will not go so far as to say that I think that all the provisions of this Bill are actually required in the City of London. In fact, with regard to some of them, I believe it would be impossible to make bye-laws or rules under them, but I consider that the majority of the provisions of the Bill are quite necessary, and I think that some of them might be conveniently applied to the rest of London.

HENRY BROWSE, ESQ., called in; and Examined.

457. *Chairman.*] YOU have been the principal Surveyor, for many years, to the Metropolitan Roads Board, have you not?—I have.

458. And you have also had the care and the construction of various other roads and streets in the metropolis?—Yes; outside the metropolis more properly; leading to the metropolis.

459. Have you not been employed in the repair and maintenance of Regent-street?—During the last five years I have wholly so; Regent-street is within the metropolis.

460. But some of the roads that you have been concerned for are absolutely within the City of London?—I have charge of Southwark Bridge just now, but it is not within the City. The City Road was the nearest approach to the City of any, and that was given up two years since.

461. You have been well acquainted, for many years, with the general traffic of the whole metropolis?—I have.

462. Have you found it necessary, in some cases, to make regulations as to the hours at which the slopping and scavenging should be done in some of the streets under your care?—In some roads we find it necessary, where they are narrow and require constant cleansing, to have it done early in the morning, and especially Regent-street; the surface of Regent-street is cleansed every morning before eleven o'clock, and also Westminster Bridge, Southwark Bridge, and Piccadilly.

463. In the west end of the town the traffic is not very large before eleven o'clock in the morning, usually speaking, is it?—Not so large that the operation of cleansing the streets impedes it in any way, but it would do so afterwards.

464. Do you think that other operations of scavenging, such as the removal of dust from houses, and the vans that are employed in the removal of building materials and so on, might also be relegated to an earlier hour in the day, so as very much to relieve the traffic in all the streets at the west end of town?—I think there would be no difficulty at all in causing the whole of the main thoroughfares to be cleansed every day, supposing it was so desired, before eleven in the morning; and as to the removal of dust from the houses, and carrying away rubbish from buildings and other matters of that kind, it would be very desirable that that should also be done early in the morning.

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465. You have had very large experience also, have you not, in the watering of streets and in the manner in which that operation is performed?—I have had, and have still.

466. Would you suggest as possible, that that might be done also in the mornings and evenings, so as to prevent the water carts interrupting the traffic in the hours in the middle of the day?—That could only be done at stated periods, by inundating the streets with a great extent of water, creating much dirt and rendering them very uncomfortable to people. The water carts do not occasion great obstruction to the traffic if they be properly regulated, and that is proved daily every day in the afternoon in Regent-street, because the water carts go out of the street to be filled, or, at all events, into a very wide space, and they water the streets in the line of the traffic, proceeding always in the same line that the traffic goes, that is to say, going up and down on the near side of the street, and it is certainly not desirable that that should be limited. We find it necessary to water Regent-street six and seven times in a day, and if we did not do so, we must do that which

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was heretofore practised, when we threw on a vast quantity of water, whereby we created a great accumulation of dirt; in the after part of the day, that dried up, and it became intolerable from the dust. Therefore, the method now is, to sprinkle the streets as lightly as we possibly can, and to repeat the operation.

467. Therefore, you think that with regard to the watering of the streets, that is necessary to be done at all hours of the day, in order to have it efficiently done?—Most decidedly it is so. It cannot be well done otherwise.

468. You say that this traffic which is occasioned by the water carts, if it goes in the ordinary course of the traffic, keeping to its proper side of the road, very little impedes the general traffic of the street?—Very little indeed.

469. And do you think, that with regard to all traffic, a very great deal of the impediment which takes place in the streets is in consequence of the proper side of the street not being kept, by the traffic moving in different directions?—I am of opinion, that if sufficient authority could be given to the police, or to any other properly authorised persons to regulate the traffic, a very great amount of the present inconvenience arising from stoppages, and danger from accidents, would be obviated. The general stoppages in the streets of London, and many of the accidents, are attributable entirely to what I term foul driving, if I may use that expression. Every man, having a pair of reins in his hands, drives as though the streets were his, and his only, quite regardless of what is doing by other persons; and if it were possible to enact that the drivers of all carriages should, as far as possible, keep to the near sides of the roads, in all cases, that would remedy one-half at least of all the obstructions that arise. I have no doubt about it at all; I arrive at the conclusion, after 40 years' experience, constantly driving through the metropolis, from one side to the other, that it is to reckless and foul driving that the obstructions are mainly attributable.

470. A number of carriages, occupying both sides of the streets, and others driving abreast down the street, consequently the traffic one way is wholly impeded by the traffic the other way?—Yes, exactly; and without any benefit to themselves if they could be led to see it. There is no doubt that there must be much more stringent regulations for the traffic of this vast metropolis, and that the enactments, when passed, must be forcibly carried into effect. We are so eminently concerned and benefited by a regulation of that kind, that slight inconveniences must give way to it. The widening of streets, no doubt, is very desirable, and would tend very much to the comfort of the people and the facility of traffic; but it is just possible that if a street be widened, ever so much, it may be impeded and interrupted by the reckless conduct of those who drive vehicles about it. I have seen Westminster Bridge carriage-way, which is 80 feet wide since the tramways have been put at the sides, interrupted, entirely for light traffic, by merely five vehicles; none perhaps on the tramways at all, a couple of heavy waggons outside the tramway, and no one daring to go on the tramway, to get to the near side, because of breaking the law, and a couple of omnibuses besides, are travelling, and you have all the whole of the roadway occupied. I, myself, have very frequently been stopped on that bridge, notwithstanding its great width, whereas the impediment might be prevented if those vans were compelled to go at a slow pace, close to the edge of the curb. And not only on that bridge, but in every other case, they should be compelled to keep within a certain distance of the curb, or the edge of the footpath, unless in passing another carriage, and then they should be obliged to return to the edge as close as they possibly can go. That certainly would give very great relief.

471. In fact, all the traffic in each direction keeping to its proper side throughout as much as possible?—As much as possible throughout; that certainly would be desirable.

472. If the police had authority to regulate the traffic, in that sense, you think that very great relief and great facility would be given to traffic passing along the streets?—I have no hesitation in saying that I believe if it could be done, and effectually done, by the police or any other authorities, it would very materially remedy the evil, and I do not know that it would not obviate four-fifths of it.

473. The inconvenience at the sides of the streets, you think would be cured?—To a very great extent.

474. With regard to the inconvenience caused by empty cabs returning from railway stations in the City; what is your opinion?—That they are a very great obstruction to the general traffic, causing more inconvenience probably than any other thing; I do not see why they should be permitted to prowl about at a foot pace. If you had to drive through Parliament-street at any time after 12 o'clock in the day, you would be obliged to walk your horse the whole length of it, merely because half a dozen empty cabs are walking up and down the street; frequently two of them almost abreast, neither coming to the side, invariably driving away from the curb and walking their horse at a slow pace. I have witnessed that daily in Regent-street, and it is no uncommon thing, especially afternoon, to count 50 cabs going up and down the street, and almost invariably two of them nearly abreast, occupying fully half the street.

475. Is not one of the causes of this evil the scarcity of cab stands?—No doubt; and it would be necessary that there should be many more cab stands, and this I apprehend could be obtained. The last witness said that it was impossible in the City of London, but I think the impossibility must be got over by a money payment, as compensation. Where the necessity is so absolute, and the step is for the benefit of all, all must contribute to it. I would have cab stands at convenient places, and always under cover. Certainly not in the main streets.

476. In what way would you contrive that they should be under cover?—I would pass them through an archway, to the back of the houses, and there have accommodation for a certain number, and I would have them at more frequent intervals.

477. With regard to the omnibuses, do you think that they interfere very much with the public safety, in their mode of plying the streets?—Of all the reckless drivers and foul drivers, perhaps, an omnibus driver is the worst. Relying upon the strength and usefulness of his vehicle to the general public, because he is a great accommodation to them he is most reckless; and certainly nothing causes so much obstruction in the streets of London as omnibuses. I admit that they

they are very great conveniences; but they are driven invariably as near the centre of the road as possible, quite regardless of the people that pass, quite regardless of what the passage may be for other vehicles; and if you desire to be put out of an omnibus at a certain place, and it happens to be the end of a street, invariably they will stop the omnibus directly opposite the centre of that street, thereby blocking up the traffic not only in the way of people going across, but whatever may be passing in and out the street. I think a very wholesome regulation would be that in no case should they be permitted to take up or set down passengers unless they are close to the edge of the footpath on the near side I would not permit an omnibus to stop in any other part of the street but close to the edge of the footpath at all times. I myself, speaking from experience, know that the stopping of omnibuses near the centre of the street for passengers to get out has tended to very serious accidents. A passenger gets out in the centre of the street desirous of proceeding to the off-side, we will suppose, from where he is going; he must, necessarily, cross the line of traffic that cannot possibly see him, or that he can see; therefore, the first step that he takes from the omnibus towards his destination he is knocked down and run over. And if he goes the other side, the near side, he must go across, possibly and more than probably, the line of very slow traffic, the drivers of which being on foot cannot see him either. I know that many accidents have occurred in that way. With regard to myself, four years ago I was riding along Whitehall, which is an enormously wide place, and I happened to be riding only at a foot pace; a female got out of an omnibus; I could not see her, and she did not see my horse, and I never saw her before she ran against the shoulder of the horse and was knocked down. I know that that is attended with very serious consequences. I think that many accidents would be obviated if a regulation such as I speak of now for omnibuses could be effected.

478. Therefore, you think that from the want of proper regulations with regard to this omnibus traffic the drivers are perfectly reckless as to the part of the street where they set their passengers down?—The omnibus drivers, I believe, are perfectly reckless of what is coming one way or going the other, and they keep as near as they possibly can to the centre of the street, and thereby impede everything else. They are certainly, so far as I can judge, the greatest obstructions to the traffic of the streets of anything that there is.

479. If they were to set down their passengers, according to your suggestion, at the side of the street, they would be obliged, would they not, to form themselves into a string, and so come up one after another to the side of the street?—Not precisely so; they would have occasionally to turn out to pass other carriages, and there would be no objection to their doing so, and going back again, as soon as they could, to the side; but in all cases when they had occasion to stop they should be compelled to go to the side.

480. You think that that would tend very much to the safety of the passengers?—I am positive that it would tend to the safety of the passengers and the public in general, and also to convenience; and it would certainly obviate a great many of the obstructions that we have now.

481. Would that plan, do you think, greatly delay the passage of omnibuses through the streets?—I do not think that it would delay their passage at all. An omnibus is obliged to wait in the centre of the street while a passenger wades through the cross line of traffic on either side to get to it, and frequently has to go a long way round before he can get to it; whereas the omnibus would be driven much quicker to the side of the street itself.

482. Therefore, you think that the police have, or, if not, they ought to have the means of regulating the traffic as you suggest?—I do; I think it is very desirable that the police, or some other properly constituted authority, should have it, because there is an absolute necessity for it.

483. Have you heard of some proposals that have been made for constructing subways and bridges across the streets for the foot passengers?—Yes; but I am of opinion that probably those would be attended with much inconvenience, and unless protected by the police, always under them or over them, they would be used for improper purposes, as Colonel Fraser apprehends. And I think that at those great crossings where such bridges or subways might be suggested, it would be better to make circuses. You are aware, no doubt, that there are circuses at Piccadilly and Oxford-street, where Regent-street and Portland-place cross, and you seldom or ever see an obstruction of traffic at either of those places. I may say almost never, unless an omnibus driver chooses to stop in the centre to put a passenger down or take one up, which they frequently do. If circuses were formed at such corners as Ludgate-hill, Bridge-street, Fleet-street, and Farringdon-street, Queen-street, King-street, and Cheapside; if the houses at the corners were removed, and a circus made, it would be a great advantage. Foot passengers do not attempt to go across those very wide crossings unless there be an obelisk in the centre, and not always then. But they pass round the right or left side of the circus, and cross the street at the narrowest place. You seldom, if ever, hear of accidents at those circuses. The relief to the traffic is very considerable, not only from the space, but the drivers can see what is approaching on each side; and certainly it is most desirable that there should be those circuses formed at all the intersections of streets, at right angles; and I would always have an obelisk at each of them, or two, perhaps, and impose a severe penalty on the driver of any carriage who would attempt to pass the obelisk on the wrong side. Many of those obelisks are now put up; for instance, there is one at Parliament-street and Bridge-street. A person coming across sees that there is no carriage coming on the proper side of that obelisk that would interrupt him, and, therefore, will attempt to go across to the obelisk; but before he gets across, some man chooses to drive the wrong side of the obelisk, and it becomes a trap to catch the person crossing.

484. So that all traffic at those wide crossings where there are circuses or obelisks, or whatever your scheme may be, you think should be restricted in the ordinary way to the near side?—I would inflict a very severe penalty upon any man attempting to drive on the wrong side, because I am satisfied that that much tends to danger; I would not limit it to the driver of any special vehicle.

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485. In slopping the streets, has any attempt been made to do that by other means than by carts at any time within your knowledge?—I believe that different machines have been tried for it, but there is no machine at present which does it effectually without injury to the surface of the roadway. For paved streets a machine is used much, I believe, in the City, and with advantage; but we have no machine at present which would cleanse the surface of a broken stone road effectually without doing great injury to it, and therefore that is an operation which is done by hand, and which can only be well and judiciously done by hand at present.

486. Does that occasion any disadvantage to the persons employed in that way; do they run risks?—If they were to attempt to do it in the middle of the day there would be very great risk of danger, and very great inconvenience; but that is an operation which should be done, as I have stated before, always early in the mornings before the traffic is about; and there is no difficulty in doing that.

487. With regard to the delivery of coals for private consumption, do you think that the same regulation might be made, not only with regard to the hours, but to the manner in which wagons should be brought up to the sides of the streets to deliver coals?—That is a matter on which I have a very strong opinion. If you see a coal-wagon or a brewer's dray, or a van with goods, a railway van, or a van of any kind, loading or unloading in the street, invariably you find that it is put across the road instead of alongside, the object being to put the dray or van three feet over the footpath. A fair and good footpath of seven feet wide is frequently impeded by three feet of wagon over it, and after that the coal-heaver, or the man who has to remove the goods, having them on his shoulder, so fills up the space of the pavement that no person can walk there at all. It is no uncommon thing to see foot-passengers obliged to go round this wagon and horses into the carriage road. There should be a general enactment that no carriage standing on a public thoroughfare should stand in any other way than in the street line, close to the edge of the footpath on either side.

488. Would not there be very great difficulty in delivering the goods in such a case?—No difficulty at all. The only objection I can see is this, that a man with a weight on his back would have to step up four or five or six inches on to the footpath, which would be easily obviated by his taking with him a block of wood, or something of that kind, to put at the tail of his wagon, which would make him level with the footpath. I see no other inconvenience than that.

489. You believe that very considerable obstruction in the streets would be removed by that means?—No doubt very considerable obstruction would be removed; and it would be a very desirable thing that that should be enacted, not only for the metropolis, but for the kingdom at large.

490. Have you observed that persons of an improper age, and unfit for the duties they have to perform, are very often appointed to drive vehicles for the delivery of goods?—I consider that in driving heavy vans and carriages of that description through London, accidents occur most frequently from the incapacity of the driver, he being too young to command his horses. It is no uncommon thing to see a man employed to drive one of those vans, who has with him a boy for the purpose of taking care of the goods; but in four times out of five, you will find that the boy is entrusted with the reins, and the van gets into an accident, because the man will not attend to his duty. I would recommend and suggest that there should be an enactment that no such vans, and heavy wagons of that kind, should be driven through the City of London by a driver under the age of 18 years.

491. The vans being of very great weight require great strength to pull them up, do they not?—Yes; they want more consideration and more thought, and greater strength than those boys possess, who drive most recklessly.

492. Sir *William Russell.*] You seem to think that a great many regulations are necessary, and whatever they may be, I suppose you consider that they would be as necessary for the whole of the metropolis as for the small portion called the City?—Yes, quite so; perhaps more so. I think that the City police are more efficient, because, being more in number, and with greater power, they can discharge those duties more effectively than those outside the City. The object of the police outside the City, so far as I am able to observe, is not to prevent obstruction, and not to take care and regulate the traffic before obstruction takes place, but to come when the obstruction has taken place, and then interfere in the best way they can to get rid of it.

493. Do you not think that it would be giving very great power to the police to allow them to interfere in all these manners which you have suggested?—I think not. I think at present they have very great powers, but they are not strictly enforced; for instance, with regard to empty cabs.

494. Do not you think that such interference as you suggest would very materially interfere with the comfort of passengers, and with the traffic of the various streets through which they passed?—I cannot think so. In either case I believe that it would tend greatly to the comfort of the community at large to remove interruptions and greatly facilitate the trade of London.

495. *Chairman.*] If regulations were made with regard to this traffic always coming on the near side, you think that the traffic generally would get into the system, and would probably not require so much interference?—If it were understood that an Act of Parliament, punishing any offence of that kind severely, was in force, and would be enforced by the police, I believe firmly that it would be very seldom necessary to have recourse to it. The mischief is that the enactments are not sufficiently strong, and those that exist they do not really effectively enforce.

496. Sir *William Russell.*] What number of police do you suppose it would be necessary to maintain as a watch over the various streets and to see that the Act was carried into force?—I have no doubt that it would be necessary to increase the number of police very considerably; but I anticipate that when the comfort of all is so deeply concerned as it is in this matter, all should contribute towards it, and that the police rate should be increased for the purpose. If it be thought too much power to confer upon the police, I would say let the Government have authority to appoint inspectors for the express purpose. It is a matter of so much importance that I would almost have a staff entirely to manage it, independently of the police if it were thought better

better, and let the officers under that establishment be designated most conspicuously in some way or other by their hats or coats, so that everybody should know them and their duty.

497. Do you think that this Act would prevent people in the length of a street, after they have passed one inspector, from going out into the middle of the street and driving along till they come up within sight of the next inspector?—I would not leave it to the inspector only to give information, but I would allow it to be an open information by any person seeing the man transgress the law.

498. Mr. *Miller*.] You have laid down some very excellent rules; can you produce any precedent, either in Paris or elsewhere, where any such regulations are carried into effect, or attempted to be?—I am not very conversant with Paris, but I believe I am right in saying that they have some regulations of the kind. I do not assert that as a fact, but I believe they have; but from what I have seen of Paris, there is no comparison between its traffic and the traffic of London.

499. Take the case of Regent-street, which is, as you know, full of shops, and some of them eminent shops, at the doors of which carriages are standing for a large portion of the day; how could you insist upon the omnibuses taking the near side of a street that is filled with carriages standing at the shop doors?—I think the honourable Member must have misunderstood me. I do not intend that they should do so; an omnibus is not to be compelled to drive to the near side, only as close as he possibly can; if a carriage is there, he must go as near to the carriage as he can. It is merely that he should not leave a space between him and the standing carriage unoccupied where no person dare go. There would be room enough for two or three, but no person dare use that space.

500. You would have the omnibus as close to the near side as possible?—Yes, and all other traffic if they could get there, but especially omnibuses; and if an omnibus had to pass two or three carrirges standing still in order to get to the edge of the footpath, I would rather he should do so, than set down a passenger in the middle of the street.

501. Regent-street is 80 feet wide, is it not?—I do not think it is quite so much as that.

502. Supposing you set a passenger down in Regent-street, on the near side, who wants to go to the opposite side, does it occur to you that you make that person walk 80 feet, instead of 40 feet, to his destination?—Yes, certainly; but it prevents that person getting on either side, immediately out of the tail of the omnibus, into a line of traffic which cannot see the person, and which the person cannot see. If you put him down on the near side invariably, the passenger would just at one step get on the edge of the footpath, and there be able to contemplate what he shall have to do to cross.

503. Would there not be considerable difficulty, supposing an omnibus were passing on the near side, where there was a row of carriages such as I have suggested. Take a lady, for instance, getting out of an omnibus: how could she get past those carriages to get on to the pavement?—Therefore I say she should not be put there; that is the very object, and the honourable Member's question answers mine immediately: I say she should not be put out there by the omnibus.

504. Supposing an omnibus to be going along the near side of the street, and a lady is put out against the row of carriages which are standing against the shops in Regent-street, she has to pass under the horses' heads, as I understand, to get to the pavement; do not you think that that is very objectionable?—Yes; and therefore I wish to obviate it. I say that she should not be so put out, but that the omnibus should be compelled to drive close to the footpath before she gets out; that is my main argument.

505–6. Whether your suggestion is good in theory or not, I will not say, or whether it is good in practice; but are you aware that Sir Richard Mayne was questioned upon this subject, and that he entirely differs from you?—I am not aware of that; I did not hear Sir Richard Mayne's evidence; but probably I have ridden and driven about the streets of London more than Sir Richard Mayne has, and I may be more conversant with the facts regarding omnibuses than he is.

507. Perhaps you are not aware that the plan which you propose would involve the necessity of leaving very large discretion to a common policeman?—I have considered the matter fully, and I have not arrived at the conclusion that the present policemen are, perhaps, the proper persons to be trusted with so much power; but their inspectors and serjeants are; and if they were found to exceed their power they should be punished for so doing; but I do suggest to this Committee the possibility, and perhaps the advantage, which would accrue if a staff of street regulators were appointed entirely for that purpose, a class of persons with whom you might trust such authority.

508. Supposing your plan were adopted, and an omnibus were obliged to keep to the near side of the street, and that it came behind a slow wagon, would not you allow it to pass that wagon?—Either to pass it or to stop behind it, whichever might be the best for it and the most convenient; it might pass in front of it, certainly.

509. You would allow it to pass?—It would be a very great restraint to say that an omnibus should not pass another carriage.

510. Have you calculated how much more time it would require than it does now to go from Paddington to the Bank if your plan were adopted?—I am perfectly satisfied that it would not require any longer time than the time which the omnibuses now lose while the passengers are coming from the side of the street to them; having to wade through the mud and other matters, and being intercepted by carriages, the time occupied would not be so great if the omnibuses were to draw to the side of the street.

511. Would you oblige empty cabs to observe the same rule?—Of course, they would have occasionally to stop on the opposite side. But I would oblige them to observe this rule: that whenever standing still the cab should be close to the edge of the footpath on either side; and if empty, and not engaged, I would compel them to proceed, immediately on their discharge, to the nearest cab-stand, and not to loiter at the foot-pace, but to proceed at a reasonable pace, such as they would go at if they were carrying a fare.

512. You would not allow empty cabs to loiter

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in the street?—Certainly not; it is one of the greatest obstructions to the traffic of London.

513. Do you think an increased number of cabstands would be required?—Yes; it might be necessary to have an increased number of stands, but I am satisfied and convinced that the empty cabs form one of the main obstructions to the traffic of the streets of London.

514. Mr. *Labouchere.*] Do you generally drive through London?—I have done so for upwards of 40 years; unfortunately, I am obliged sometimes to have a person to drive me now.

515. You use your own carriage?—Yes.

516. And you do not use cabs?—Not very frequently; I am obliged to do so occasionally.

517. Do not you consider that it would be a very great inconvenience to those who do use cabs not to have empty cabs about the streets?—I have considered that question, and I think that it would not be so if convenient cabstands were provided in such positions for the return cabs: and, besides, I am satisfied that gentlemen walk now in the streets frequently as far as they would walk then, from one cabstand to the other. I do not think that the convenience which gentlemen have from hailing cabs under the present system, would be so materially interfered with as to warrant the great obstruction arising from the empty cabs in our streets.

518. Are there not a great many places which are almost a quarter of a mile distant from a cabstand?—It is so; but that would be obviated according to my suggestion. But I scarcely know where there is a quarter of a mile, between one cabstand and another, except perhaps in some of the squares; probably there might be; and I cannot conceive that the inconvenience to gentlemen using cabs would be so great as to warrant the present obstruction.

519. Mr. Alderman *Lawrence.*] I believe that you have known this metropolis for some considerable number of years?—I have.

520. And you have driven about it and through it, in all directions, at all times?—Yes.

521. From your knowledge of it, have you not found that the traffic has increased year by year, to a very large extent?—I have.

522. And that the traffic at the present moment within the City of London is of that character that if it were not regulated by the police it could not go on at all?—At present I would observe that I fear there is little or no regulation of it by the police; any interference by them comes after the evil exists, in all cases; in the City as well as in the suburbs it comes after the obstruction takes place; but they should have authority to interfere with drivers before the stoppage takes place.

523. First, with regard to the City, you think it is absolutely necessary that more power should be given to the police authorities in the City to regulate the traffic, in order to ensure the safety of passengers and to facilitate the traffic through the streets of the City?—I do.

524. Do you not find the traffic in the City of London much greater than that out of the City of London?—In some parts of it.

525. Do you know any place out of the City where you find such an amount of traffic converging to one point as that opposite the Mansion House?—I do not think there is any spot except it be the approach to Temple Bar. There is a vast traffic at the approach to Temple Bar, and it accumulates there from the narrowness of Temple Bar, perhaps, quite as much as at the Mansion House; but there is no other point, that I am aware of, where the same amount of traffic converges upon one spot.

526. You think it very advisable that a limit should be placed upon the age of the drivers of those railway vans; do you think it also requisite that a limit should be placed upon the width of those vans and upon the height to which they should be loaded?—It is desirable that that should be the case for general traffic and general commerce; but there are instances where certain portions of our traffic could not be carried upon narrow carriages, and others where it is impossible that it could be carried without the loads attaining a greater altitude than you would propose to limit it to; there must be a discretionary power. We have certain things to be carried through London which must of necessity be higher than, probably, you would wish to load a wagon; and we have other things so bulky that you could not get upon a carriage the ordinary span of five, or six, or seven feet. Frequently, you see vans and cars constructed to carry those matters, which are eight feet wide.

527. Do you not think that when those bulky articles are carried, the hours at which they should be taken through the City should be at those times when the traffic of the city of London is not so great?—Unfortunately, the carriage of those goods through the City is mostly to and from the docks, and, therefore, it could not be possible to limit the hours so as to interfere with the dock hours; you would have the wagons stopping in the streets all night with their loads, because they could not get into the docks. Unfortunately, the carriage of such goods as I have now stated is more than four-fifths of them to and from the docks, and the docks, opening at 10 in the morning and closing at four, leaves a very limited time for carrying such goods in. We will suppose, for instance, a loaded wagon coming from one of the railway stations to go to the London Docks, from the Great Western Railway, for instance, it would be almost impossible that it could go down there before 10 o'clock.

528. Might not the route be designated in order that it might go by a route which should not so much interfere with the traffic?—That would be very desirable.

529. When you allude to omnibuses and vehicles being compelled to keep the near side, I presume that would not apply to all streets, but only to those which are completely filled up with traffic?—I would have it apply to all streets, that they should keep as close as possible to the near side; that is to say, if there were two carriages between them and the near side of the road, they must keep the third; but, probably, when that was the case, there would be none on the opposite side; if every man, driving a carriage, were compelled to return to the near side as soon as he possibly could, that would very greatly facilitate the traffic.

530. Have you heard the number of accidents which have taken place in the metropolis during the last 14 months?—I heard the evidence of the last witness; I was not aware of the exact number before, but I witness daily, from reading the papers, that a vast number do occur, and I attribute them mainly to the reckless and foul driving of the carriages; I believe that a very wholesome enactment, not only for van and coal wagon, and omnibus traffic, but even for gentlemen's

men's carriages, would be, that they should all be under the same rule, if that were possible, and be compelled to drive as close as possible to the near side of the road.

531. You stated, did you not, that at the west end of London, there is very little traffic before 11 o'clock in the morning?—Before 10 or 11 o'clock, there is comparatively little traffic.

532. But is not the traffic in the City earlier?—Perhaps an hour earlier.

533. People come into the City between 9 and 10, do they not?—The greater number of omnibuses and cabs and railway trains, you will find arrive in the City between half-past 8 and half-past 10.

534. I may take it that from your knowledge of the London traffic, you think it absolutely necessary that restrictions and regulations should be made, of a stringent character in order that the traffic of London may be better carried on?—Not only of a more stringent character but more strictly enforced as well.

535. And do you think that in the City more regulation ought to be enforced in consequence of the narrowness of the streets, and the large amount of traffic than would be necessary in the outer districts?—Probably it would be found necessary to have a stronger force in the City than outside it; but whatever regulations are laid down by the Act of Parliament, which is the only authority that could make them, they should be strictly carried out, with sufficient force to do it. I have heard evidence given with respect to the markets, and I may say that it has always been with me a matter of considerable importance in my mind that the City authorities should have more wholesale markets. The idea of fish coming only to Billingsgate, which was 50 years ago supplied entirely by water, is really absurd. The double traffic of that market is something enormous; first of all the whole of the fish has to be carried through the streets to Billingsgate, and then to be dispersed again over the City; I do not see that there could be any objection to two or even three or four wholesale fish markets, and those should be as near as possible to the railway stations. And the same rule would apply to the dead meat markets. I have no doubt that the time is not far distant, when London will be supplied almost wholly by dead meat markets, instead of from the cattle markets. The one now providing in Smithfield is very appropriate for the purpose; it is near the centre of the City, it is in a large open space, and there is railway communication with it, and it may be sufficient for the present, but the time is not far distant, when there certainly will be more dead meat markets than one as wholesale markets. It would greatly relieve the traffic in the neighbourhood of Tower Hill and Thames-street, if there were one or two other wholesale fish markets in the City.

H. Browse, Esq.

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536. *Chairman.*] It is almost impossible, is it not, that Billingsgate market can be more inconveniently placed than it is for the traffic carried on there?—It is a farce to think that that one market at the side of the river, so isolated as it is, and so difficult to get at, is the only means of supplying the whole of London with fish.

537. The reason of its being placed there originally, was that fish chiefly came up the Thames?—Yes, and a very sufficient reason it was at that time, no doubt.

JOHN PEAKE KNIGHT, Esq., called in; and Examined.

538. *Chairman.*] WHAT are you?—I am the Traffic Superintendent of the South Eastern Railway.

539. Will you inform the Committee what it is that you particularly wish to explain with regard to either the local or the general traffic of the metropolis?—I may state that I do not appear here officially, but merely as a private individual, and I would explain that my attendance here to-day has arisen out of a conversation which I have had with Sir Richard Mayne. I saw Sir Richard Mayne about 10 days ago, and, in course of conversation, suggested to him that I thought some improvement might be made with regard to the regulation of the street traffic, more especially in respect to the safety of the public at the street crossings. I submitted to Sir Richard Mayne that I thought it was quite possible to apply, to some extent, to the street crossings the regulations which are general upon railways. I showed him a sketch of what I meant, and he appeared to look upon my scheme with favour, and he said that he thought it might in some degree be carried out. I left with him the sketch and he brought it here the other day, but did not exhibit it to the Committee; he thought perhaps it would be better for me to attend myself and give evidence; in fact, he suggested that course. I will, therefore, now, with the permission of the Committee, explain my system. Almost every one has seen and is aware of the system of semaphore signals in use upon the railways; I would suggest, therefore, that at the street crossings in important thoroughfares, of course not in the bye streets, but such places, say, as the Strand and Cheapside, and the busy parts of the City and West End, semaphore signals should govern or control such street-crossings. The crossings to which it might be deemed desirable to apply my system should be regularly appointed and authorised street-crossings for foot passengers at or near where such crossings now exist; and semaphore signals should be fixed thereat, to indicate to omnibus and cab drivers, and, of course, to drivers of all vehicles and also equestrians, that they are to approach and pass over such crossings at cautious speed; in fact, similar to the regulation observed, where necessary, by engine drivers at level crossings upon railways. Perhaps you will allow me further to explain my plan. Upon our railway, and, of course, upon other lines there are a great number of level crossings, some hundreds, I may say thousands of them. Over bridges and tunnels are very much objected to, and there are consequently but few of them, and the few that exist are but little used. We have upon our own line almost been obliged to take down foot bridges, rather than erect them. There is a strong objection towards them, especially on the part of ladies, infirm people, and so forth. I may here mention that we were actually threatened with legal proceedings by the authorities at a certain place in Kent for having erected

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erected a foot-bridge, so as to render, as we imagined, greater safety; but the foot bridge was found to be so objectionable that they wished us to take it down again; and the consequence is, that it is as little used as possible. Resuming my explanation as to street crossings, I would suggest that one of the semaphore signals should be erected on each side of the street at important public crossing places; the position of the arms and lights of the signal would denote to drivers that they must approach the crossings with caution, and it might be found expedient, perhaps, to raise the signal arms up to the horizontal, or danger position, by day, and to turn on a red light by night, at certain intervals. I would suggest, for instance, 30 seconds in every five minutes, or one minute in every five; this would give six minutes per hour, distributed through the hour, for the public to cross over the streets, at the appointed crossings, with security. They have a system in Paris, I find, of stopping the vehicle traffic every now and then, at public crossing places, similar to what I suggest. It is done by the *sergent de ville;* when he sees that there are a sufficient number of persons on the pavement to justify it, he then raises his arm, and the traffic is stopped in each direction, and the people are allowed to cross over, after which the vehicle traffic is again resumed. The regulations in Paris, in these matters, are, I think, much more strict than they are here. At any rate, they are more rigidly observed. They are much more strict with cab drivers and drivers of vehicles in the streets than we are in this country, from what I have seen. But there is also, if anything, greater danger in Paris, with regard to street crossing, than here, for the Boulevards, as you are aware, are very wide; I suppose from 80 to 90 feet wide, and they drive at the contrary side of the road to what we do here. Our near side is their off side, and *vice versâ;* therefore, to the English especially, there is greater scope for danger.

540. They are not in the habit of erecting refuges in Paris, are they?—Very few indeed. I believe they object to them, from what I have heard. They are of opinion, I have been told, that they encroach too much upon the street way.

541. Therefore, where the necessity arose, if I understand you, you would make use of your semaphore to warn the drivers that they were to stop?—Yes.

542. Or that they were to go at a slower pace?—Yes, certainly. With regard to the crossing of streets by the public at important and busy thoroughfares in certain parts of London, I mean at important crossings, where the vehicle traffic is very considerable, and where a policeman is stationed to watch such crossing, a semaphore signal-post should be erected on each side of the street, as shown in the rough sketch on No. 1 Plan, which I have here. I understand that in the City they have extra police, as in Paris, they have a *sergent de ville*, on each side of the road at such places. At the King-street and Queen-street Cheapside crossing, I believe they have two policemen for seven or eight hours during the day. The semaphore signal in question should be worked similarly to the mode in which they are worked upon railways, viz., the arms by day, and lights by night, to show at "caution" towards the vehicle traffic in each direction, thereby denoting that such traffic must pass over the crossing at a cautious or careful speed, say walking pace. (This I have shown in sketch B, in No. 2 plan). In order to afford the public (viz., the timid, infirm persons, females, &c.) an opportunity of crossing over the street at stated intervals, the signals could be raised to stop, or danger position against the vehicle traffic. (This will be seen in sketch A, in No. 2 plan). The signals might be so worked at stop, as I have before explained, say for 30 seconds in every five minutes, which would give an allowance to the crossing, say of six minutes, distributed at regular intervals through every hour, or any other interval that might be agreed upon. The semaphore signals could be worked by the policeman in charge of the crossing, and (as on railways) he could work the signal-post opposite to him by a wire laid under the street pavement, so that one leverage or action on his part would work both signals on each side of the street. The space between the opposite position of each semaphore would be, say, about 15 feet, which would be sufficient for, and would define the foot crossing space. (*The Witness produced a Sketch, and explained it to the Committee.*) We find that the railway public understand these signals at station crossings nearly as well as the officials. In order to utilise the semaphore posts and economise the space on the foot pavement, I would combine with the semaphore signals the street lamps, as I have shown in this sketch. With regard to refuges, I am of opinion that they might, to a great extent, by this system, be done away with. I really am of opinion that they take up too much valuable space; for instance, there is one opposite the Charing Cross Station, which takes up six feet, out of a total width of only about 40 feet. Of course, to a great extent, this obstructs the vehicle traffic, and it narrows the street at an important part of it.

543. Do you agree with the last witness, who thinks that the traffic ought all to pass on the near side each way?—Yes, I quite agree with him. I think if that was strictly carried out, and omnibuses were prevented, as I think they ought to be (of course, this would cause some inconvenience, but still the matter should be considered as a whole for the public good), from crossing to the off side, as they do, to set down passengers; and if they were compelled to keep to their proper near side, it would do away with a great deal of the obstruction which now exists.

544. If the whole of the traffic were kept as much as it could be at the near side of the street, that would keep a continuous stream of traffic open both ways better than at present?—Quite so; it would keep the stream of traffic open. I have given this subject some attention. I have had more or less to do with the regulation of public traffic on railways for more than 25 years, and, from what I have seen, it is the crossing over of traffic in the streets which tends more to obstruction and blocking of the streets than anything else.

545. And by keeping the stream of traffic open, you approach, as near as possible, on a line of public road to a separate line of rails?—Quite so. In fact, it may be said to be just the same in the streets as upon railways. If we were to cross a train over to the wrong line, say, for instance, at London Bridge or Charing Cross, in the busy time of the morning, we should upset the

the whole of the morning traffic, and we should hardly get right again during the day.

546. Do you think that that would delay the pace at which the traffic could be carried on?—No, sir, I think it would have rather a beneficial effect in that respect. In connection with this subject of street crossings I would mention what has occurred to me with regard to the repairs of the streets. I do not know whether that is a matter which will come under your notice, but from what I have for a long time observed, the present arrangements for the repairing of the streets are a great source of obstruction, delay, and annoyance to the public. Where streets are broken up I would have a notice previously given to the public that such a street will be blocked up, so as to prevent carriages coming and finding the street up, and thereby being compelled to make a detour to avoid such closed street. I have noticed many times the annoyance and inconvenience sustained by the public who have arrived at such a street, and then being obliged to turn back owing to the street being broken up, of which they were not previously aware; and I would suggest, as before stated, that if it were possible a previous notice should be given by the police or any other department before the street is broken up; in fact I have here sketched my meaning in regard to this, which I also submitted to Sir Richard Mayne, and he seemed to approve of it.

547. You mean a notice given to public carriages, not to every individual?—I would put a notice on the board at the cab ranks.

548. So, that if you ordered a cab to take you to a station, you might not be rendered too late for the train by finding that the street that you were going through was taken up?—Quite so. I would add that in order that the public, and especially cabmen and drivers of all vehicles, should be aware of the different streets under repair, a weekly notice (say a supplementary sheet to the "Police Gazette," or in any other form) be issued, notifying to everyone concerned the following information: Name of street under repair. About how long before it will be entirely reopened for vehicle traffic. What routes the vehicles are recommended to take in each direction, if the street is entirely closed to vehicles. A conspicuous copy of such notice to be exhibited, as before mentioned, on a board at the various cab ranks in London. I believe, now they put a lantern at the end of a street under repair, but I would erect semaphore signals at each end, which would plainly show the street, or the part of the street, under repair, and I would have the part of the street that is open for traffic indicated by the semaphore signal, being shown at "caution;" this signal arrangement would do away with the lantern, which sometimes gets knocked over. I was, upon one occasion, nearly meeting with a serious accident in a cab when driving through a street at night. My cab ran up against the stones, the lantern not being there. I would recommend, therefore, that the system which is carried out on railways be, to some extent, adopted for streets under repair. We issue a notice to the drivers and put up signals wherever the line is going to be blocked up, that such a part of it may be avoided, or travelled upon with caution. I intended bringing with me a small working model, which one of our engineers is making for me, of these semaphore signals, but probably you may understand them sufficiently from the sketches.

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549. Mr. Alderman *Lawrence*.] In working those signals how many men at each spot would be required to work them?—It would only take one man; for instance, I have mentioned King-street and Queen-street, Cheapside. I should think you might dispense with one man there, because a man on one side would be able to work the signal and to regulate the traffic on the other side.

550. Supposing in spite of the signal, a cab drove by and paid no attention to it, what would you do?—Of course you must make the driver liable to a penalty.

551. The policeman would have to run after the cab and take his number?—Yes, just so, in the same way as now.

552. But then who would work the signal?—The policeman could put the signal up to stop the traffic.

553. You presume that they would pay attention to the signal?—Yes.

554. And the policemen looking after it would be able to manage the signal?—Yes, of course.

555. Then you would require one policeman to be constantly at the place?—Yes. There is always one man, I presume, at these important crossings.

556. How many crossings would you think it necessary to apply this system to?—I have not gone into that question. I would apply it to all the very important places; places like Cheapside, or the Strand, or Charing Cross. My plan would, I think, be better for the cab and omnibus drivers than at present, inasmuch as, instead of their having to avoid the pedestrians crossing the streets at so many irregular places, thereby causing a constant checking of their horses and vehicles, and making them pursue a zigzag instead of a straight course, and so interrupting the regular stream of the traffic, the bulk of the people would, for their own security, make for and cross over at the appointed and authorised crossings.

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APPENDIX.

Appendix, No. 1.

PAPER handed in by Colonel *Fraser*, 23 March 1866.

BYE-LAWS, RULES, ORDERS, and REGULATIONS, made the 20th day of October 1863, by the Court of the Mayor and Aldermen of the City of *London*, for the said City, under the Provisions of "The CITY of LONDON TRAFFIC REGULATION ACT, 1863." App. No. 1.

1. Every omnibus, metropolitan stage-carriage, van, or other carriage, licensed for the conveyance of passengers at separate fares, passing eastwards through St. Paul's Churchyard, and proceeding to, or whose destination as stated on such vehicle, or in its license, shall be London Bridge, or to any place over London Bridge, shall, when it reaches the south-east corner of St. Paul's Cathedral, pass down Cannon-street, and thence over London Bridge; and every such carriage making the reverse journey shall traverse the like route; and the driver of every such omnibus, metropolitan stage-carriage, van, or other carriage licensed for the conveyance of passengers at separate fares, shall drive the same pursuant to this regulation. Certain omnibuses, &c. to use Cannon-street.

2. No person shall drive any vehicle through the streets between the hours of nine in the morning and six in the evening, laden with goods, materials, articles, or things whatsoever, which shall be of a nature so heavy as to require more than four horses to draw it. No loads with more than four horses between 9 a.m. and 6 p.m.

3. No person shall drive or conduct any kind of locomotive propelled by steam (except a steam fire-engine actually going to or returning from a fire) within any street between the hours of six in the morning and ten at night. No locomotives between 6 a.m. and 10 p.m.

4. No person shall drive any cart, waggon, dray, or other vehicle, for the conveyance of goods, wares, and merchandise, through the streets, between the hours of nine in the morning and six in the evening, laden to a greater height than 16 feet, measuring from the ground, or laden to a greater width than 7 feet, or the breadth between the outsides of the wheels of which vehicle (except it shall have been in use before or on the 28th day of July 1863) shall be greater than 7 feet. Limiting height and width of loads between 9 a.m. and 6 p.m.

5. No person shall drive any cart, waggon, or other vehicle wholly or partially laden with timber, scaffolding, or other poles, logs of wood, masts, spars, or other articles or things, whether consisting of wood, metal, or any other material exceeding 25 feet in length, or 8 feet 6 inches in breadth, through any street between the hours of nine in the morning and six in the evening. No timber, &c. exceeding a certain size, between 9 a.m. and 6 p.m.

6. No person shall, between the hours of nine o'clock in the morning and five o'clock in the evening deliver any coals, beer, wine, or other liquid, in casks, conveyed by means of any waggon, cart, van, carriage, or other vehicle, in the following streets: viz., Gracechurch-street, Bishopsgate-street Within, Threadneedle-street, Cornhill, Lombard-street, Leadenhall-street, Fenchurch-street, Tower-street, Eastcheap, Cannon-street, King William-street, Upper or Lower Thames-street, Fleet-street, Ludgate-hill, Ludgate-street, Newgate-street, Cheapside, the Poultry, Gresham-street, Princes-street, Lothbury, Throgmorton-street, or Old Broad-street. No coals, &c. to be delivered in certain streets between the hours of 9 a.m. and 5 p.m.

7. Every driver of any waggon, cart, carriage, or other vehicle, shall in meeting any other vehicle keep his waggon, cart, carriage, or vehicle to the left or near side of the street, and every such driver, in passing any other vehicle, shall keep his waggon, cart, carriage, or vehicle Drivers to keep the near side in meeting, and take the off side in passing.

App. No. 1.

vehicle on the right or off side of the street (except in cases of actual necessity, or some sufficient reason for deviation).

Persons not to hinder others passing them.

8. No person shall in any manner wilfully prevent any other person from passing him, or any waggon, cart, or other carriage, or horse, mule, or other beast of burden, under his care, in any street; nor by negligence or misbehaviour prevent, hinder, or interrupt the free passage of any person, waggon, cart, or other carriage, or horse, mule, or other beast of burden in any street.

Prohibiting certain obstructions.

9. No person shall slide upon any footway, nor stand, loiter, or remain together with other persons on any street or footway, without reasonable cause, nor hawk or expose for sale any shell or other fish, bird, game, fruit, greengrocery, meat, toy, or other article or thing of any kind, in any street, or on or near any footway, so as in either of such cases to obstruct or incommode the free passage of any such street or footway.

No wilful obstructions.

10. No person shall by any other means than herein provided, wilfully obstruct the free passage of any street or footway, nor insult, jostle, or annoy any person passing along any street or footway.

Obstructions of footways by goods, &c.

11. No person shall suffer any goods or merchandize, empty hampers, cases, or barrels, or any coal or fuel intended for any warehouse or house to remain in the street, or on the footway for a longer period than shall be necessary for the housing or removing thereof.

Vegetables, fruit, &c. not to be sold on trucks in certain streets between 9 a.m. and 6 p.m.

12. No person shall expose for sale any vegetables, fruit, fish, or other article carried upon any truck, barrow, cart, or other vehicle, in any of the following streets, viz., London Bridge, Blackfriars Bridge, Gracechurch-street, Bishopsgate-street Within, Threadneedle-street, Cornhill, Lombard-street, Leadenhall-street, Fenchurch-street, Tower-street, Eastcheap, Cannon-street, King William-street, Upper or Lower Thames-street, Fleet-street, Ludgate-hill, Ludgate-street, Newgate-street, Cheapside, the Poultry, Gresham-street, Prince's-street, Lothbury, Throgmorton-street, or Old Broad-street, between the hours of nine in the morning and six in the evening.

Vehicles to stand parallel to the pavement.

13. The driver of every dray, cart, van, waggon, carriage, or other vehicle whatsoever, shall cause the same to stand with the side thereof parallel to the foot pavement, when loading or unloading, or stopping for any other purpose.

Persons to obey directions of police in certain cases.

14. Every driver of any waggon, cart, carriage, or other vehicle, and the rider of every horse or other animal, shall obey the direction of the constable on duty in any street, with regard to the street or portion of street to be used by him, or the direction or route he must take through any street, in any case when an obstruction is in any way wholly or partially caused, or likely to be caused to the free passage of any street, or whenever the diversion of the traffic is necessary by reason of its amount or nature, or on account of any accident, fire, the passing of artillery waggons or troops, the repairs of streets or pavements, or other emergency or occasion.

Standings for shoeblacks.

15. The streets or places mentioned in the first column of the Schedule hereto, shall be and are hereby appointed places at which street shoeblacks may stand to exercise their calling; and the number of such shoeblacks who may stand at each of such places, shall not exceed the number specified in the second column of such Schedule; provided that the Commissioner of the City Police shall, and he is hereby empowered, from time to time, and as often as he shall think necessary, or the public convenience may require, to alter the standing places in any street, or to increase the number of standings in the same, or to allot standing places in other streets, and to fix, alter, or increase the number of shoeblacks at any standing place, so that the number of standing places do not exceed 150, and the number of shoeblacks do not in the whole exceed 300.

Obstructions at standings prohibited.

16. No shoeblack other than those authorised by the Commissioner of Police, shall be permitted to occupy the appointed standings, nor remain there after being required by a constable on duty to leave; nor shall any person or persons other than those requiring and using the services of a shoeblack assemble or remain at such standings, or in the immediate proximity thereof, after being requested by any constable on duty to leave; nor shall any person or persons molest or obstruct any authorised shoeblack in the exercise of his calling.

Interpretation clause.

17. In the interpretation of these Bye-Laws, the word "street," shall include any street, lane, road, square, court, alley, passage, place, bridge, or other public way.

THE SCHEDULE above referred to.

STATION.	Number of Shoe-blacks.
Adelaide-place	1
Aldgate, by Church	1
Aldermanbury, by Church	1
Aldersgate-street, by Edmund's-place	1
Basinghall-street, Church-passage	1
Billingsgate Market	1
Bishopsgate Churchyard, West-end	1
Bishopsgate Churchyard, East-end	1
Bishopsgate-street, by Artillery-lane	1
Bishopsgate-street, by Alderman's-walk	1
Blackfriar's Bridge, North-end	1
Blackwall Railway	2
Cannon-street, by St. Swithin's Church	1
Cheapside, West-end	1
Cornhill, by Royal Exchange	2
Crosby-square, West-end	1
Farringdon-street, by Fleet-wall	1
Fenchurch-street, by No. 65	1
Finsbury-pavement, by South-place	1
Fish-street-hill, by Monument	1
Fleet-street, by Clifford's-inn	1
Fore-street, by Cripplegate Church	1
General Post Office, by East-side	1
Gracechurch-street, by Ship Tavern-passage.	1
Great Tower-street, North-east Corner	1
Great St. Helen's, West-end	1
Gresham-street, in Church-passage	1
Holborn Bridge	2
Holborn-bars, North-side	1
Holborn-bars, South-side	1
Holborn-hill, by Horse and Groom Public House.	1
Honey-lane Market	1
King William-street, by Crooked-lane	2
King William-street, by Fishmonger's Hall.	1
Lime-street, North-end	1
Lothbury, by Founder's-court	1
London wall, by Albion Chapel	1
London-wall, by Circus-place	1
Long-lane	1
Lower Thames-street (Bridge)	2
Ludgate-hill, by St. Martin's-court	1
Ludgate-hill, by Stationer's Hall-court	1
Mansion House, South-west Corner of	1
Mansion House-place	1
Minories, by Hammet-street	1
Minories, by John-street	1
Moorgate-street, in Coleman-street-buildings.	1
New London-street, by Steps	1
Redcross-street, North-west Corner	1
Rood-lane, South-end	1
Royal Exchange-buildings, South-end	2
Royal Exchange-buildings, North-end	2
Royal Exchange, by Duke of Wellington's Statue.	6
St. Ann's-lane	1
St. Martin's-le-Grand, Post Office Steps.	4
St. Mary Axe, by St. Andrew Undershaft Church.	1
St. Paul's Churchyard, in Black Swan-alley.	1
St. Paul's Churchyard, by Bar	1
St. Paul's School, in front of	1
Savage-gardens, by Railway	1
Skinner-street, by Church	1
Skinner-street, by Snow-hill	1
Smithfield, North-side	1
Temple-lane	1
Threadneedle-street, by Royal Exchange.	2
Threadneedle-street, by Church	1
Tower-hill, by Urinal	1
Tower-hill, by Round House	1
Upper Thames-street, by London Bridge	2
Whitefriar's Dock	1
Wood-street, by Church	1
TOTAL	88

Appendix, No. 2.

PAPERS delivered in by Sir *Richard Mayne*, and referred to in his Evidence of 20 March 1866.

COMPARATIVE STATEMENT of the Total Number of DRIVERS of VEHICLES, brought before MAGISTRATES for FURIOUS DRIVING in the STREETS, during the Year 1864, and in 1865, to the 30th November, distinguishing those who were Apprehended and Charged, and those who were Summoned for the Offence.

YEAR.	Number Apprehended and Charged.			Number Summoned.			REMARKS.
	TOTAL Number.	Results before Magistrates.		TOTAL Number.	Results before Magistrates.		
		Discharged.	Convicted.		Discharged.	Convicted.	
1864 - - -	224	46	178	263	56	206	1 summons not served.
1865 to 30th November	292	28	264	433	74	352	7 pending.

RETURN of the Total Number of PERSONS KILLED, or INJURED, by VEHICLES in the STREETS, during the Year 1864, and in 1865 to the 30th November.

YEAR.	Numbers Killed.	Numbers Injured.	REMARKS.
1864 - - - - - - - - -	114	1,493	
1865 to 30th November - - - -	111	1,458	

RETURN of the Number of PERSONS KILLED, or INJURED, by VEHICLES in the STREETS, in each Division, during the Year 1864, and to the end of November 1865.

DIVISION.	During 1864.		During 1865 to 30 Nov.		DIVISION.	During 1864.		During 1865 to 30 Nov.	
	Number of Persons Run over and Killed	Number of Persons Maimed or Injured.	Number of Persons Run over and Killed.	Number of Persons Maimed or Injured.		Number of Persons Run over and Killed.	Number of Persons Maimed or Injured.	Number of Persons Run over and Killed.	Number of Persons Maimed or Injured.
A or Whitehall -	6	66	1	28	N or Islington -	6	78	13	89
B or Westminster -	1	58	6	84	P or Camberwell -	5	102	9	98
C or St. James' -	1	125	2	115	R or Greenwich -	8	58	4	69
D or Marylebone -	5	68	5	103	S or Hampstead -	3	24	9	29
E or Holborn - -	5	121	1	59	T or Kensington -	11	36	5	47
F or Covent Garden -	2	26	1	21	V or Wandsworth -	2	28	3	19
G or Finsbury - -	5	72	8	78	W or Clapham -	6	28	3	22
H or Whitechapel -	5	55	2	78	X or Paddington -	10	77	8	64
K or Stepney - -	13	93	12	95	Y or Highgate -	14	50	12	63
L or Lambeth - -	4	141	1	128					
M or Southwark -	2	187	6	169	TOTAL - - -	114	1,493	111	1,458

Metropolitan Police Office, 4, Whitehall-place,
March 1866.

Richard Mayne.

METROPOLITAN POLICE.

RETURN of the Numbers of Drivers of Vehicles apprehended and Charged with Furious Driving in the Streets in each Division, during the Year 1864.

DIVISION.	Total Number Apprehended.	Results before Magistrates.		Sentenced to Imprisonment.				Amount of Fine; or Period of Imprisonment, in Default of Payment.									PENALTIES INFLICTED.												
		Discharged.	Convicted.	12 Months.	2 Months.	1 Month.	14 Days.	3 *l.*, or 1 Month.	45 *s.*, or 1 Month.	40 *s.*, or 1 Month.	20 *s.*, or 1 Month.	20 *s.*, or 14 days.	20 *s.*, or 7 days.	14 *s.*, or 14 days.	10 *s.*, or 7 days.	6 *s.*, or 3 days.	5 *s.*, or 7 days.	6 *l.*	5 *l.*	3 *l.*	40 *s.*	30 *s.*	20 *s.*	15 *s.*	10 *s.*	9 *s.*	7 *s.* 6 *d.*	7 *s.*	5 *s.*	2 *s.* 6 *d.*	1 *s.*
A or Whitehall	8	–	8	–	–	–	–		–	–	–	4	1	–	1	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–
B or Westminster	6	1	5	–	–	–	–	–	–	1	–	1	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
C or St. James's	16	1	15	–	–	1	1	–	–	–	2	3	–	–	5	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–
D or Marylebone	5	2	3	–	1	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
E or Holborn	7	1	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	2	–	–	–	–	–	3	–	–
F or Covent Garden	6	–	6	–	–	–	–	1	1	–	–	2	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
G or Finsbury	10	3	7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	2	–	–	–	2	–	–	–	1	1	–
H. or Whitechapel	4	2	2	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K or Stepney	30	6	24	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	2	–	4	–	7	–	1	–	7	2	–
L or Lambeth	9	3	6	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	1	1	–	1
M or Southwark	7	3	4	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	2	–	–	–	1	–	–	–	–	–	–
N or Islington	41	11	30	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	7	–	4	–	7	–	2	–	8	–	1
P or Camberwell	14	4	10	*1	–	–	–	–	–	4	–	3	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
R or Greenwich	11	–	11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	2	–	4	1	–	–	3	–	–
S or Hampstead	5	1	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	2	–	–	–	–	–	–
T or Kensington	8	–	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	3	1	2	–	–	–	–	–	–
V or Wandsworth	2	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–
W or Clapham	6	1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	3	–	–	–	–	–	–	–	1
X or Paddington	8	4	4	–	–	–	1	–	–	1	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Y or Highgate	21	3	18	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	3	1	4	–	–	–	5	1	1
Total	224	46	178	1	1	1	4	1	1	8	3	15	1	2	10	1	5	1	2	2	21	1	22	3	30	1	3	1	28	5	4

* Tried at Sessions, convicted for causing grievous bodily harm.

Metropolitan Police Office, 4, Whitehall-place, March 1866.

(signed) *Richard Mayne.*

METROPOLITAN POLICE.

RETURN of the Number of DRIVERS of VEHICLES, Summoned for FURIOUS DRIVING in the STREETS, in each Division, from the 1st January to the 30th November 1865, showing the results before Magistrate in each Case.

DIVISION.	Total Number Summoned.	Results before Magistrates.			Amount of Fine and Period of Imprisonment, in Default of Payment.								AMOUNT OF PENALTIES INFLICTED.																
		Pending.	Dismissed.	Convicted.	40 *s.* or 1 Month.	20 *s.* or 14 Days.	20 *s.* or 10 Days.	10 *s.* or 7 Days.	8 *s.* or 7 Days.	5 *s.* or 7 Days.	5 *s.* or 5 Days.	1 *s.* or 3 Days.	60 *s.*	40 *s.*	30 *s.*	20 *s.*	18 *s.*	15 *s.*	14 *s.*	10 *s.*	8 *s.*	9 *s.*	7 *s.*	5 *s.*	3 *s.*	2 *s.* 6 *d.*	2 *s.*	1 *s.*	6 *d.*	Costs.
A or Whitehall - -	10	1	1	8	–	–	–	–	–	–	–	–	–	1	1	1	–	–	–	1	–	–	–	2	–	–	–	–	–	2
B or Westminster - -	31	3	2	26	–	–	–	–	2	–	–	–	–	1	–	1	2	–	–	2	3	–	–	9	1	–	1	–	–	4
C or St. James's - -	20	2	7	11	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	4	–	–	–	3	–	1	–	1	–	–
D or Marylebone - -	16	–	6	10	–	–	–	4	–	–	–	–	–	–	–	3	–	–	–	1	–	–	–	–	–	–	–	2	–	–
E or Holborn - - -	11	–	5	6	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	2	–	–	–	2	–	–	–	–	–	–
F or Covent Garden -	10	–	4	6	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
G or Finsbury - - -	9	–	3	6	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	2	–	–	–	–	–	–	2	–	–	–
H or Whitechapel - -	5	–	1	4	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K or Stepney - - -	31	–	1	30	–	–	–	–	–	–	–	–	–	7	–	10	–	–	–	10	–	–	–	–	–	1	–	–	–	2
L or Lambeth - - -	19	–	4	15	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	3	7	2	–	–	–	–	1
M or Southwark - -	20	1	2	17	–	1	–	–	–	–	–	–	–	1	–	2	–	–	–	4	–	1	–	2	–	–	4	–	–	2
N or Islington - - -	31	–	5	26	–	–	–	–	–	–	–	–	–	5	3	–	–	–	–	7	–	–	1	7	–	3	–	–	–	–
P or Camberwell - -	12	–	3	9	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	2	–	–	2	2	–	–	–	1	–	–
R or Greenwich - -	21	–	1	20	–	–	–	–	–	–	–	–	–	2	–	5	–	–	–	10	–	–	–	2	–	–	1	–	–	–
S or Hampstead - -	14	–	2	12	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	1	5	–	–	3	–	–	1
T or Kensington - -	22	–	4	18	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	4	–	–	2	2	–	4	1	2	–	–
V or Wandsworth - -	24	–	2	22	–	–	–	–	–	–	–	–	–	2	–	6	–	1	–	8	–	–	–	–	–	1	1	1	2	–
W or Clapham - - -	13	–	1	12	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	4	–	–	1	4	–	1	–	–	–	1
X or Paddington - -	72	–	15	57	3	17	–	17	–	1	14	3	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–
Y or Highgate - - -	42	–	5	37	–	–	–	–	–	–	–	–	–	2	1	3	–	1	–	12	–	–	–	10	–	3	–	5	–	–
TOTAL - - -	433	7	74	352	8	20	1	22	2	1	14	3	1	25	6	38	2	3	2	74	4	1	10	57	3	14	13	12	2	14

Metropolitan Police Office, 4, Whitehall-place.

Richard Mayne, March 1866.

RETURN of the Number of DRIVERS of VEHICLES Summoned for FURIOUS DRIVING in the STREETS, in each Division, during the Year 1864, showing the Results before Magistrates in each Case.

DIVISION.	Total Number Summoned.	Results before Magistrates.		Sentenced to 14 Days' Imprisonment.	Amount of Fine, and Period of Imprisonment, in Default of Payment.								AMOUNT OF PENALTIES INFLICTED.																	
		Dismissed.	Convicted.		3 *l.* or 1 Month.	40 *s.* or 1 Month.	40 *s.* or 21 days.	30 *s.* or 14 days.	20 *s.* or 14 days.	20 *s.* or 10 days.	10 *s.* or 7 days.	2 *s.* 6 *d.* or 7 days.	5 *l.*	3 *l.*	40 *s.*	30 *s.*	20 *s.*	10 *s.*	8 *s.*	7 *s.* 6 *d.*	7 *s.*	6 *s.*	5 *s.*	4 *s.*	3 *s.*	2 *s.* 6 *d.*	1 *s.* 6 *d.*	1 *s.*	6 *d.*	Costs.
A or Whitehall	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
B or Westminster	8	2	6	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	1	–	–	–	1	–	–	–	–	–	–	2
C or St. James's	9	1	8	–	–	–	–	–	–	–	–	–	–	–	1	–	2	2	–	–	–	–	2	–	–	–	–	–	–	1
D or Marylebone	10	3	7	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	5	–	–	–	–	–	–	–
E or Holborn	20	6	14	–	–	–	–	–	–	–	–	–	–	1	7	–	3	1	–	–	–	–	2	–	–	–	–	–	–	–
F or Covent Garden	10	2	8	–	2	–	1	1	–	2	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–
G or Finsbury	7	2	5	–	–	–	–	–	–	–	–	–	–	–	2	1	–	–	–	–	1	–	–	–	–	–	1	–	–	–
H or Whitechapel	6	2	4	–	–	1	–	–	1	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–
K or Stepney	14	2	12	–	–	–	–	–	–	–	–	–	–	–	–	1	1	3	–	–	–	–	5	–	–	1	1	–	–	–
L or Lambeth	19	4	15	–	–	–	–	–	–	–	–	–	–	–	1	–	1	1	–	–	3	–	3	–	3	3	–	–	–	–
M or Southwark	11	3	8	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	–	–	–	–	–	–	1	–	1	–	–	2
N or Islington	19	5	14	–	–	–	–	–	–	–	–	–	–	–	2	–	2	2	–	–	–	–	6	–	–	1	–	–	–	1
P or Camberwell	20*	3	16	–	–	–	–	–	–	–	–	–	–	–	–	1	1	1	–	–	1	3	4	2	3	–	–	–	–	–
R or Greenwich	5	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	2	2	–	–	–	–	1	–	–	–	–	–	–	–
S or Hampstead	17	5	12	–	–	–	–	–	–	–	–	–	–	–	1	–	1	4	–	–	–	–	6	–	–	–	–	–	–	–
T or Kensington	11	–	11	–	–	–	–	–	–	–	–	–	–	1	–	–	3	4	–	–	–	–	1	–	–	1	1	–	–	–
V or Wandsworth	17	2	15	–	–	–	–	–	–	–	–	–	–	–	–	–	5	3	–	3	–	–	2	–	–	–	1	1	–	–
W or Clapham	7	1	6	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	–	–	–	–	1	–	–	1	–	–	1	–
X or Paddington	19	5	14	1	–	5	1	–	3	–	2	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Y or Highgate	33	8	25	–	–	–	–	–	–	–	–	–	–	–	4	1	3	5	–	–	–	–	10	–	–	1	–	1	–	–
TOTAL	263	56	206	1	2	7	2	1	4	2	4	1	1	2	18	5	29	35	1	3	5	3	49	2	7	8	5	2	1	6

Metropolitan Police Office, 4, Whitehall-place.

* 1 Summons not served.

Richard Mayne, March 1866.

METROPOLITAN POLICE.

RETURN of the Numbers of DRIVERS of VEHICLES, Apprehended and Charged with FURIOUS DRIVING in the STREETS in each Division, from the 1st January to the 30th November 1865, both dates inclusive.

DIVISION.	Total Number Apprehended.	Result before Magistrates.		Sentenced to Imprisonment.			Amount of Fine, or Period of Imprisonment in default of Payment.																		Penalties Inflicted.																	
		Discharged.	Convicted.	1 Month.	21 Days.	Committed for trial.	5 *l.* or 1 Month.	3 *l.* or 1 Month.	40 *s.* or 1 Month.	40 *s.* or 21 Days.	40 *s.* or 14 Days.	30 *s.* or 1 Month.	30 *s.* or 14 Days.	20 *s.* or 1 Month.	20 *s.* or 14 Days.	20 *s.* or 10 Days.	15 *s.* or 7 Days.	10 *s.* or 7 Days.	10 *s.* or 5 Days.	10 *s.* or 4 Days.	7 *s.* 6 *d.* or 10 Days.	6 *s.* or 3 Days.	5 *s.* or 7 Days.	5 *s.* or 4 Days.	4 *s.* or 4 Days.	Held to Bail.	3 *l.*	40 *s.*	30 *s.*	25 *s.*	20 *s.*	15 *s.*	10 *s.*	7 *s.* 6 *d.*	5 *s.*	2 *s.* 6 *d.*	2 *s.*	1 *s.*
A. or Whitehall -	18	2	16	–	–	–	–	–	2	1	2	–	1	–	2	1	1	1	1	1	–	–	–	1	–	–	–	–	–	–	–	–	–	2	–	–	–
B. or Westminster -	5	–	5	–	–	–	–	–	1	–	–	1	–	–	1	–	–	2	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
C. or St. James -	19	–	19	1	1	–	–	–	2	–	3	–	–	–	8	–	–	2	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–
D. or Marylebone -	10	2	8	–	–	–	–	1	1	–	1	–	–	–	2	1	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
E. or Holborn - -	6	–	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	3	–	1	–	–	–
F. or Covent Garden -	4	–	4	–	–	–	1	–	1	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
G. or Finsbury - -	9	–	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	–	1	3	–	1	–	1	–	–
H. or Whitechapel -	8	–	8	–	–	–	–	–	–	–	–	–	–	2	2	–	–	1	1	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
K. or Stepney - -	59	8	51	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	20	1	–	9	–	7	–	12	2	–	–
L. or Lambeth - -	6	1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	1	1	–	1	–	–	–
M. or Southwark -	4	–	4	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	1	–	–
N. or Islington - -	52	3	49	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	12	1	–	9	–	6	2	15	4	–	–
P. or Camberwell -	8	2	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	2	–	–	1	–	–	–	1	–	1	–
R. or Greenwich -	12	–	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	3	–	–	1	–	4	–	2	–	–	–
S. or Hampstead -	7	2	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	1	–	–	–
T. or Kensington -	10	–	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	2	–	5	1	1	–	–	–
V. or Wandsworth -	5	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	–	1	–	–	–	–	–
W. or Clapham - -	6	1	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	1	–	1	1	–	–
X. or Paddington -	18	5	13	1	–	–	1	–	4	1	–	–	–	–	3	–	–	2	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Y. or Highgate - -	26	2	24	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	2	–	–	5	–	3	1	7	3	1	1
TOTAL - - -	292	28	264	2	1	1	2	1	11	2	6	1	1	2	20	2	1	9	2	1	1	1	4	1	1	3	1	48	2	1	39	1	33	4	45	11	2	1

Metropolitan Police Office, 4, Whitehall Place.

Richard Mayne.

SPECIAL

REPORT

FROM THE

SELECT COMMITTEE

ON THE

LONDON (CITY) TRAFFIC REGULATION BILL;

TOGETHER WITH THE

PROCEEDINGS OF THE COMMITTEE,

MINUTES OF EVIDENCE,

AND APPENDIX.

Ordered, by The House of Commons, *to be Printed,*
13 and 14 *April* 1866.

[*Price* 8 *d.*]

174.

Under 8 *oz.*

REPORT

FROM THE

SELECT COMMITTEE

ON THE

LONDON (CITY) CORPORATION GAS, &c. BILLS;

TOGETHER WITH THE

PROCEEDINGS OF THE COMMITTEE,

MINUTES OF EVIDENCE,

AND APPENDIX.

Ordered, by The House of Commons, *to be Printed,*
15 *May* 1866.

REPORT - - - - - - - - - - - - - p. v

PROCEEDINGS OF THE COMMITTEE - - - - - p. vii

MINUTES OF EVIDENCE - - - - - - - - - p. 1

APPENDIX - - - - - - - - - - - - p. 281

Tuesday, 6*th March* 1866.

Ordered, THAT the London (City) Corporation Gas Bill be read a second time, and committed to a Select Committee of twelve Members, of whom five shall be nominated by the Committee of Selection.

Ordered, THAT it be an instruction to the Committee "to inquire into the Operation and Results of the 'Metropolis Gas Act, 1860.'"

Monday, 12*th March* 1866.

Ordered, THAT the Gaslight and Coke Company Bill, and the Gaslight and Coke, and the City of London Gaslight and Coke Companies Bill, be committed to the Select Committee on the London (City) Corporation Gas Bill.

Monday, 9*th April* 1866.

Ordered, THAT the London Gas Bill be committed to the Select Committee on the London (City) Corporation Gas Bill.

Friday, 13*th April* 1866.

Committee nominated—

Mr. Hastings Russell.	Colonel North.
Mr. Dutton.	Mr. Morrison.
Mr. Woods.	Mr. Westropp.

Monday, 16*th April* 1866.

Ordered, THAT Mr. Lusk be added to the Select Committee on the London (City) Corporation Gas Bill.

Tesday, 17*th April* 1866.

Ordered, THAT Colonel North be discharged from further attendance on the Committee, and that Mr. Staniland be added thereto.

Wednesday, 18*th April* 1866.

Members added by the Committee of Selection—

Sir John Trollope.	Mr. Kinglake (Rochester).
Sir William Gallwey.	Mr. Hartley.
Sir John Ogilvy.	

Monday, 23d April 1866.

Ordered, THAT it be an instruction to the Select Committee on the London (City) Corporation Gas Bill, that the several Petitioners who have prayed to be heard by Counsel, and the Promoters of the Bills referred to the said Committee, may appear and be heard by Counsel, if they think fit, upon the inquiry into the operation of the "Metropolis Gas Act, 1860."

Tuesday, 24th April 1866.

Ordered, THAT the Select Committee on London (City) Corporation Gas, &c. Bill have power to send for persons, papers, and records.

Ordered, THAT Five be the quorum of the Committee.

Wednesday, 25th April 1866.

Ordered, THAT Mr. Westropp be discharged from further attendance on the Committee.

Ordered, THAT Mr. Paull be added thereto.

Ordered, THAT the parties appearing before the Select Committee on the London (City) Corporation Gas, &c. Bills, have leave to print the Minutes of the Evidence taken before the Committee, day by day, from the Committee Clerk's copy, if they think fit.

Friday, 27th April 1866.

Ordered, THAT two Petitions from Bethnal Green, praying for repeal of the Gas Metropolis Act, 1860, be referred to the Select Committee on the London (City) Corporation Gas, &c. Bill.

Wednesday, 2d May 1866.

Ordered, THAT the Petition of Owners and Inhabitants of St. Mary, Stratford-le-Bow, and St. John, at Hackney, and others, against the Imperial Gas Company Bill, be referred to the Select Committee on the London (City) Corporation Gas, &c. Bill.

Tuesday, 15th May 1866.

Ordered, THAT the Committee have power to report their Observations, together with the Minutes of Evidence taken before them, to The House.

REPORT.

THE SELECT COMMITTEE on the London (City) Corporation Gas, &c. Bills, and who were instructed to "inquire into the Operation and Results of the Gas Metropolis Act, 1860";——Have considered the Matters to them referred, and have agreed to the following REPORT:

Your Committee have enquired into the working of the 23 & 24 Vict. c. 125, regulating the supply and quality of Gas provided by the 13 Companies to the metropolis, and have examined witnesses from many large towns, as well as the metropolis, in various parts of the kingdom, viz., Manchester, Edinburgh, Birmingham, Walsall, Plymouth, Brighton, &c. They have found the illuminating power greater, and the quality of the gas better, than in London, and the price cheaper to the consumers. The illuminating power varied from 14 sperm candles to 30 candles, whereas the power in London is fixed at 12 candles for common Gas, and 20 for cannel Gas, by the Act 23 & 24 Vict. c. 125.

The purification of the Gas in the metropolis is imperfect, and an excess of sulphur remains, which is highly injurious to pictures, leather, metals, &c. Since the passing of the Act 23 & 24 Vict. c. 125, the price of Gas to consumers has been increased until recently, whilst the power of light has been less, and the quality of the article worse.

That whereas the dividends of the Gas Companies in 1860 in no instance reached the amount of 10 per cent. on their capital, the effect of the Act was to raise the market value of their shares, and to increase the rate of dividend until, as has been shown to the satisfaction of Your Committee, every Company in the metropolis now pays 10 per cent., and many Companies have, in addition, paid large sums in the form of back dividends, and have laid by reserve funds.

Your Committee are of opinion that the minimum illuminating power should be increased, and the maximum price reduced.

That a Chemical Board of three members should be appointed from time to time, for the metropolis, at the expense of the Gas Companies, by the Secretary of State, to regulate the analysis of the purity and illuminating power of all Gas supplied to consumers by the different Gas Companies, with power to fix the mode and places for testing the Gas, such Board to report to the Home Secretary.

That every Gas Company should, within its own district, and at its own cost, provide and maintain, in a convenient situation, at a distance of not less than 1,000 yards from the works, a testing place, and all proper materials, apparatus, machinery, and instruments for testing the illuminating power and purity of the Gas by the public officer, and that such testing place should be under the control and management of the local authority. That the Gas Company should be at liberty to send an officer to be present at the testing by the public officer, but should not interfere in such testing.

That each Gas Company may have a separate testing place in the same building, under their own control, so as to be enabled to test the same Gas at the same time.

That public officers for the purpose of testing the illuminating power and purity of Gas should be appointed by the local authority—one for each district.

That such officers should be authorised to test continuously, and report the result daily to the local authority; that every testing should be registered, and not the average only.

That a chief Gas analyst should be appointed by the local authority to direct the operations of the testing officers; should receive daily reports, and submit and report on them weekly to the local authority.

If any complaint be made by the Company as to the testing, there should be an appeal to the chief analyst, whose decision should be final.

The weekly report, if unchallenged, should be conclusive as to the experiments made.

That the expenses incident to the appointment of such public officers should be paid by the local authorities.

That the Metropolitan Board of Works be the local authority outside the City, and the Commissioners of Sewers within the City.

That in the event of the local authority making default in appointing such officers, for the period of twelve months, the Secretary of State shall have power to appoint officers, charging the cost of the same on the funds of the local authority.

The power of making up former deficient dividends for six years out of surplus profits acts injuriously to the public. Your Committee recommend that such power should be limited to three years.

That the losses to Companies through neglect of the directors or their officers, as instanced in the case of the Great Central Gas Company, in Wood-street, where damages were recovered amounting to 25,000 *l.*, with heavy law costs, were charged on the surplus profits, instead of the shareholders' dividends, thus depriving the public of a reduction in the price of Gas supplied to it, and, in fact, making the consumers answerable for the Company's default.

Your Committee think that the system of districts should be continued, and with a view to the economy of administration, and the convenience of the consumers and of the public, that every facility should be offered by Parliament for the further extension of the system of regulated monopoly, either in the way of the amalgamation of the several existing Companies, or of the disposal of the interests of the several Companies in the metropolis to some body or bodies representing the ratepayers of the metropolis, on such terms and conditions as may be agreed upon, and as Parliament may see fit to impose.

Your Committee having received evidence that the mode of recovering penalties against Gas Companies is inoperative, whether before a police magistrate or the Secretary of State, recommend that a more summary process be adopted.

That the Metropolis Gas Act should be amended to carry out the suggestions contained in this Report

15 May 1866.

PROCEEDINGS OF THE COMMITTEE.

Tuesday, 24*th April*, 1866.

MEMBERS PRESENT:

Sir John Trollope.	Mr. Dutton.
Mr. Lusk.	Mr. Staniland.
Sir John Ogilvy.	Sir W. Gallwey.
Mr. Kinglake.	Mr. Hartley.
Mr. Hastings Russsell.	Mr. Morrison.
Mr. Woods.	

Sir JOHN TROLLOPE was called to the Chair.

Room cleared.—The Committee deliberated.

Resolved,—" That the Committee will, in the first instance, 'inquire into the operation and results of the Metropolis Gas Act, 1860,' in pursuance of the instruction of The House (6th March 1866), and will then proceed with the consideration of the several Gas Bills in the order in which they were referred by The House to the Committee."—(*Chairman*).

Mr. *Karslake*, on behalf of the Corporation of London, addressed the Committee with reference to the operation of the Metropolis Gas Act, 1860.

[Adjourned to To-morrow, at Twelve o'clock.

Wednesday, 25*th April*, 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Morrison.	Mr. Hartley.
Mr. Kinglake.	Mr. Hastings Russell.
Mr. Lusk.	Mr. Dutton.
Sir John Ogilvy.	Mr. Staniland.
Mr. Woods.	Sir William Gallwey.

Mr. *William Samuel Jeffries*, Mr. *Andrew Maclure*, Mr. *William Tiffin Stiff*, Mr. *Edward Daniel Johnson*, and Mr. *James Medwin*, were severally examined.

[Adjourned to To-morrow, at Twelve o'clock.

Thursday, 26*th April*, 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Hartley.	Mr. Kinglake.
Mr. Hastings Russell.	Mr. Lusk.
Mr. Paull.	Mr. Woods.
Mr. Staniland.	Sir John Ogilvy.
Mr. Morrison.	Sir William Gallwey.

Mr. *Robert Sclater*, Mr. *Andrew Bowring*, Dr. *Henry Letheby*, and Dr. *Thomas Hillier*, were severally examined.

[Adjourned to To-morrow, at Twelve o'clock.

Friday, 29*th April* 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Staniland.	Mr. Morrison.
Mr. Dutton.	Mr. Lusk.
Mr. Hastings Russell.	Mr. Paull.
Mr. Hartley.	Sir William Gallwey.
Sir John Ogilvy.	Mr. Woods.
Mr. Kinglake.	

Dr. *Henry Letheby*, further examined.

Dr. *Andrew White Barclay*, Dr. *Charles Aldis*, Dr. *Septimus Gibbon*, Mr. *Edward Rogers*, and Mr. *C. J. Clementshaw*, were severally examined.

[Adjourned to Monday next, at Twelve o'clock.

Monday, 30*th April* 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Morrison.	Mr. Hastings Russell.
Mr. Kinglake.	Mr. Dutton.
Mr. Lusk.	Mr. Paull.
Sir John Ogilvy.	Mr. Staniland.
Mr. Woods.	Sir William Gallwey.
Mr. Hartley.	

Mr. *Samuel Hughes*, Mr. *T. A. Hedley*, Mr. *W. Heywood*, Mr. *F. W. Jebb*, and Mr. *R. Arntz*, were severally examined.

[Adjourned to To-morrow, at Twelve o'clock.

Tuesday, 1*st May* 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Morrison.	Mr. Paull.
Mr. Kinglake.	Mr. Staniland.
Mr. Lusk.	Mr. Woods.
Mr. Hastings Russell.	Sir John Ogilvy.
Mr. Dutton.	Sir William Gallwey.

Mr. *Samuel Wilkinson*, examined.

[Adjourned to Thursday next, at Twelve o'clock.

Thursday, 3*d May* 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Morrison.	Mr. Paull.
Mr. Kinglake.	Mr. Hastings Russell.
Mr. Lusk.	Mr. Hartley.
Mr. Staniland.	Sir William Gallwey.

Mr. *John Nanson*, Mr. *Edwin Rendle*, Mr. *Zachary Mellor*, and Mr. *Robert Paget*, were severally examined.

Mr. *William Francis Jebb*, further examined.

Mr. *Samuel Hughes*, examined.

[Adjourned to To-morrow, at Twelve o'clock.

Friday, 4th May 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Woods.	Mr. Lusk.
Mr. Hastings Russell.	Mr. Morrison.
Mr. Hartley.	Sir William Gallwey.
Mr. Staniland.	Mr. Paull.
Mr. Dutton.	Mr. Kinglake.

Mr. *Joseph Heron* and Mr. *John Lancaster*, were severally examined.

Mr. *Samuel Hughes*, further examined.

Mr. *Samuel Edwards* and Mr. *De Jersey*, were severally examined.

[Adjourned to Monday next, at Twelve o'clock.

Monday, 7th May 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Morrison.	Mr. Hastings Russell.
Mr. Kinglake.	Mr. Dutton.
Mr. Lusk.	Mr. Paull.
Sir John Ogilvy.	Mr. Staniland.
Mr. Hartley.	

Mr. *William Haywood*, Mr. *George William Stevenson*, Mr. *James Bell*, and Mr. *John Romans*, were severally examined.

Mr. *Tom Abercrombie Hedley*, further examined.

[Adjourned to To-morrow, at Twelve o'clock.

Tuesday, 8th May 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Kinglake.	Mr. Paull.
Mr. Lusk.	Mr. Staniland.
Sir John Ogilvy.	Mr. Morrison.
Mr. Hartley.	Sir William Gallwey.
Mr. Hastings Russell.	Mr. Woods.

Room cleared.—The Committee deliberated.

Mr. *Hope Scott* was heard to state what concessions the gas companies were prepared to make.

Mr. *Robert Baxter*, was examined.

[Adjourned to Friday next, at Twelve o'clock.

Friday, 11*th May* 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Kinglake.	Mr. Hastings Russell.
Mr. Lusk.	Mr. Staniland.
Sir John Ogilvy.	Sir William Gallwey.
Mr. Paull.	Mr. Morrison.
Mr. Hartley.	

Mr. *Robert Baxter*, further examined.

Mr. *Karslake* was heard with reference to the proposals made by Mr. Hope Scott on behalf of the gas companies.

Room cleared.—The Committee deliberated.

[Adjourned to Monday next, at Twelve o'clock.

Monday, 14*th May* 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Hastings Russell.	Sir John Ogilvy.
Mr. Kinglake.	Mr. Lusk.
Mr. Staniland.	Mr. Morrison.
Mr. Hartley.	Mr. Woods.
Mr. Dutton.	Sir William Gallwey.
Mr. Paull.	

The Committee deliberated.

Resolutions to be proposed by the Chairman, read as follows:—

"1. Your Committee has inquired into the working of the 23 & 24 Vict. c. 125, regulating the supply and quality of gas provided by the 13 Companies to the metropolis.

"2. Your Committee examined witnesses from many large towns, as well as the metropolis, in various parts of the kingdom, viz., Manchester, Edinburgh, Birmingham, Walsall, Plymouth, &c.

"3. In all cases your Committee found the illuminating power greater, and the quality of the gas better, than in London, and the price cheaper to the consumer. The illuminating power varied from 14 sperm candles to the 1,000 cubic feet of gas, to 30 candles, in the above towns; whereas the power in London is fixed at 12 candles by the Act 23 & 24 Vict. c. 125.

"4. The purification of the gas in the metropolis being effected generally by oxide of iron, instead of hydrate of lime, is imperfect, and an excess of sulphur remains, which is highly injurious to pictures, leather, metals, &c.

"5. The effect of the Act 23 and 24 Vict. c. 125, has been to increase the price of gas to consumers, whilst the power of light has been less, and the quality of the article worse.

"6. Your Committee is of opinion that the power of illumination should be increased to a minimum of 14 sperm candles of six to the pound, and the maximum of price reduced to 4*s.* per 1,000 cubic feet for common gas, and 6*s.* for cannel gas.

"7. That a Chemical Board of three members should be appointed for the metropolis by the Secretary of State, to regulate the analysis of all gas supplied to consumers by the different Gas Companies, with power to regulate the mode and places for testing the gas, and shall determine the burner to be the standard burner, and all burners used for testing gas shall be counterparts thereof, and such Board shall determine the quantity of sulphur or other impurity in each cubic feet of gas; to appoint assistants, to be paid by the Companies. Reports to be made weekly to the Metropolitan Board of Works, and to the Commissioners of Sewers for the City.

"8. The system of accounts of the Gas Companies acts injuriously to the public, more especially

especially the power of making up former deficient dividends for six years out of surplus profits. Your Committee think such system should be abolished, or greatly shortened, as regards the number of years that such back reckonings should be allowed.

"9. That the reserve fund of each Company for renewals and extension of works should continue fixed in amount at one-tenth of the capital of such Company, and the interest carried to annual account, the principal being invested in Government securities.

"10. That the losses to Companies through neglect of the directors or their officers, as instanced in the case of the Great Central Gas Company, in Wood-street, where damages were recovered amounting to 25,000 *l.*, with heavy law costs, were charged on the surplus profits, instead of the shareholders' dividends, thus depriving the public of a reduction in the price of gas supplied to it, and, in fact, making the consumers answerable for the Company's default.

"11. Your Committee, in conclusion, thinks that the system of districts for the Companies should not be disturbed.

"12. Penalties to be recovered by more summary process before a magistrate, the present mode being inoperative.

Resolutions to be proposed by Mr. *Lush*, read, as follows:—

"1. That three scientific persons shall be appointed by the Secretary of State to determine what burner shall be the standard burner to represent the illuminating power of 15 sperm candles, as at present understood.

"2. That such burner shall be deemed the standard burner, and be deposited with the Metropolitan Board, and all burners used for testing gas in the Metropolis shall be exact counterparts thereof.

"3. That such persons shall determine what test shall be used to ascertain the quantity of sulphur and ammonia, or other impurities in gas, supplied by any company.

"4. That ordinary gas shall be supplied to the public of an illuminating power of not less than 15 sperm candles, as at present understood, and cannel coal gas of not less than 20 candles.

"5. That ordinary gas supplied to the public shall not contain more than 15 grains of sulphur per 100 cubic feet.

"6. That the Metropolitan Board should be required to test the quality of the supply of gas by any Company throughout the Metropolis.

"7. That the present minimum price of 3 *s.* 4 *d.* shall be the maximum price charged by any Company after the 1st January next for ordinary gas, and 4 *s.* for cannel coal gas.

"8. That vestries and public bodies shall be entitled to purchase gas for public lamps, or any other public purpose, by meter, if they shall so determine.

"9. That the Metropolitan Board of Works shall appoint an auditor to inspect the several Companies' accounts, and report on any excessive expenditure shown thereby.

"10. That if excessive expenditure is reported, such expenditure shall be referred to arbitration.

"11. That no new works shall be erected within the Metropolis, as defined by the Metropolis Local Management Act.

"12. That no new capital shall be raised by any of the Companies to bear a higher rate of interest than 5 per cent. per annum.

"13. That there shall not be any increase of capital without the sanction of the Metropolitan Board, or of Parliament, and that in the event of an application to Parliament for that purpose the Company shall, before introducing its Bill, deliver to the Metropolitan Board an account showing the necessity for such increase.

"14. That all Private Bills now before this Committee and the House should be subject to the provisions of such new Act.

"15. That the Metropolitan Gas Act should be amended in the foregoing particulars.

"16. That in the event of the Gas Companies declining to accept the foregoing amendments, the Metropolitan Board should be authorised to make arrangements for the better supply of gas to the Metropolis.

"17. That testing places shall be erected at a point to be agreed.

"18. Penal consequences and proceedings.

Resolutions to be proposed by Mr. *Morrison*, read, as follows:—

"That the local authority shall forthwith, after the passing of any amended Act, erect suitable testing houses in each gas district, and appoint testing officers; and that in the event of the local authority making default in erecting such testing houses and appointing such officers, for a period of 12 months after the passing of the Act, the Secretary of State shall have power to erect testing houses and appoint officers, charging the cost the same on the funds of the local authority.

"That all new capital to be hereafter raised for the purposes of the extension of works be offered to the public, by public tender, and that the interest on such new capital shall not exceed 7 per cent.

"As an amendment to the 12th Resolution of the Chairman, to add at the end of the Resolution the following words:—

"But rather that in view of the economy of administration, and the convenience of the consumers, and of the public, that every facility should be offered by Parliament for the further extension of a system of a well-regulated monopoly, either in the way of the amalgamation of the several existing companies, or of the disposal of the interests of the several companies in the metropolis to some body representing the ratepayers of the metropolis, on such terms and conditions as may be agreed upon, and as Parliament may see fit to impose."

Resolutions to be proposed by Mr. *Kinglake*, read, as follows:—

"That officers for the purpose of testing the quality of gas should be appointed by local authorities—one for each district.

"That such officers should be authorised to test continuously, and report the result to the local authority once a week; that every testing should be registered, and not the average.

"That a chief gas analyst should be appointed to direct the operations of the testing officers; should receive daily reports, and submit and report on them weekly to the local authority.

"If any complaint be made by the Company as to the testing, there should be an appeal to the chief analyst.

"The weekly report, if unchallenged, should be conclusive as to the experiments made.

"That the Metropolitan Board of Works be the local authority outside the City, and the Commissioners of Sewers within the City.

Draft Report to be proposed by Mr. *Staniland*, read, as follows:—

"The Committee have to report as to the operation of the Metropolis Gas Act, and its results:

"1. That the system of districting the 13 Companies therein named has been found sufficiently advantageous to induce the Committee to recommend its continuance.

"2. That notwithstanding complaints to a limited extent have been brought under the notice of the Committee, yet that the Companies have substantially complied with the provisions of the Act as to standard of illuminating power and purity of gas.

"3. That the price to the consumer has since the passing of the Act been reduced by all, save one of the Companies, one-ninth, and by two of the Companies even more.

"Although, perhaps, these are all the points which fall strictly within the limits of the reference, yet on the facts given in evidence the Committee is disposed to recommend that in any future legislation on the subject—

"The standard of illuminating power should be increased to 14 sperm candles; that the maximum price for gas from common coal should be 4*s.*, and from cannel, 6*s.* That a more satisfactory mode for ascertaining purity should be substituted for that prescribed by the Act. That penalties against companies should be more easily recovered, if possible, than at present provided for; and that the provisions of the Companies Clauses Act for ascertaining the state of the reserved fund, with a view of determining when a reduction in price is to take place, should be more definite.

"That with respect to the manner of ascertaining the purity of gas, the Committee suggests that a chemical Board, consisting of three chemists, should be formed (to be appointed by the Home Secretary), whose decision, from time to time, as to the maximum of sulphur to be allowed, and the mode of ascertaining its presence, as also that of other impurities, should be final; and that should the Board decide that less than 20 grains

of

of sulphur should be the maximum, then the maximum price to be increased, with the permission of the Home Secretary, after hearing the objections thereto of the local authorities."

[Adjourned to To-morrow, at Twelve o'clock.

Tuesday, 15*th May* 1866.

MEMBERS PRESENT:

Sir JOHN TROLLOPE in the Chair.

Mr. Hastings Russell.	Sir John Ogilvy.
Mr. Staniland.	Sir William Gallwey.
Mr. Hartley.	Mr. Morrison.
Mr. Serjeant Kinglake.	Mr. Woods.
Mr. Paull.	Mr. Dutton.
Mr. Lusk.	

Draft Report proposed by the Chairman, read 1st time, as follows:—

"The Select Committee on the London (City) Corporation Gas, &c. Bills, and who were instructed to "inquire into the Operation and Results of the Gas Metropolis Act, 1860;"—Have considered the Matters to them referred, and have agreed to the following Report:

"1. Your Committee have enquired into the working of the 23 & 24 Vict. c. 125, regulating the supply and quality of gas provided by the 13 Companies to the metropolis, and have examined witnesses from many large towns, as well as the metropolis, in various parts of the kingdom, viz., Manchester, Edinburgh, Birmingham, Walsall, Plymouth, Brighton, &c. They have found the illuminating power greater, and the quality of the gas better, than in London, and the price cheaper to the consumers. The illuminating power varied from 14 sperm candles to 30 candles, whereas the power in London is fixed at 12 candles for common gas, and 20 for cannel gas, by the Act 23 & 24 Vict. c. 125.

"2. The purification of the gas in the metropolis being effected generally by oxide of iron, instead of hydrate of lime, is imperfect, and an excess of sulphur remains, which is highly injurious to pictures, leather, metals, &c. Since the passing of the Act 23 & 24 Vict. c. 125, the price of gas to consumers has been increased, whilst the power of light has been less, and the quality of the article worse.

"3. Your Committee are of opinion that the illuminating power should be increased to a minimum of 14 sperm candles of six to the pound, as tested by the Argand burner, as defined by Clause 34 of the Birmingham and Staffordshire Gas Act, 1860 (27 & 28 Vict. c. 239), and the maximum of price reduced to 4 *s.* per 1,000 cubic feet for common gas, and 6 *s.* for cannel gas of 20 candles.

"4. That a Chemical Board of three members should be appointed from time to time, for the metropolis, at the expense of the Gas Companies, by the Secretary of State, to regulate the analysis of the purity of all gas supplied to consumers by the different Gas Companies, with power to fix the mode and places for testing the gas, such Board to report to the Home Secretary.

"5. The system of accounts of the Gas Companies acts injuriously to the public, more especially the power of making up former deficient dividends for six years out of surplus profits. Your Committee recommend that such system should be abolished, or greatly shortened, as regards the number of years that such back reckonings should be allowed.

"6. That the losses to Companies through neglect of the directors or their officers, as instanced in the case of the Great Central Gas Company in Wood-street, where damages were recovered amounting to 25,000*l.*, with heavy law costs, were charged on the surplus profits, instead of the shareholders' dividends, thus depriving the public of a reduction in the price of gas supplied to it, and, in fact, making the consumers answerable for the Company's default.

"7. Your Committee think that the system of districts should be continued, and with a view to the economy of administration, and the convenience of the consumers and of the public, that every facility should be offered by Parliament for the further extension of the system of regulated monopoly, either in the way of the amalgamation of the several existing Companies, or of the disposal of the interests of the several Companies in the metropolis to some body or bodies representing the ratepayers of the metropolis, on such terms and conditions as may be agreed upon, and as Parliament may see fit to impose.

"8. Your Committee having received evidence that the mode of recovering penalties against Gas Companies is inoperative whether before a police magistrate or the Secretary of State, recommend that a more summary process be adopted.

Draft Report proposed by the Chairman, read a second time, paragraph by paragraph.

Paragraph 1, agreed to.

Paragraph 2.—Amendments made.—Amendment proposed to leave out the words, "Since the passing of the Act 23 & 24 Vict. c. 125, the price of gas to consumers has been increased," in order to insert the words, "after the passing of the Act 23 & 24 Vict. c. 125, the price of gas to consumers was increased, but during the last 12 months reductions have taken place in all the companies save one, with the exception of the charges for public lamps"—(Mr. *Paull*)—instead thereof.—Question put, That the words proposed to be left out stand part of the paragraph.—The Committee divided:

Ayes, 5.	Noes, 5.
Mr. Kinglake.	Sir W. Gallwey.
Mr. Lusk.	Mr. Hartley.
Sir J. Ogilvy.	Mr. Morrison.
Mr. Hastings Russell.	Mr. Paull.
Mr. Woods.	Mr. Staniland.

Whereupon the Chairman declar ed himself with the Ayes.

Amendments made.—Paragraph, as amended, agreed to.

Amendment proposed, after paragraph 2, to insert the following paragraph: "The Act of 1860 appears to have proved more favourable in its operation to the Gas Companies than to the gas consumers; on the one hand the immediate effect of the Act was to raise the price of gas supplied to the gas consumers and to the public lamps, and though a reduction in the price has since taken place, this has been due to the fact that the companies have been left with a surplus profit to go to the reduction in the price, after paying their shareholders the maximum dividend allowed"—(Mr. *Morrison*).—Question put, That this paragraph be inserted in the proposed Report.—The Committee divided:

Ayes, 2.	Noes, 8.
Mr. Morrison.	Sir W. Gallwey.
Mr. Paull.	Mr. Hartley.
	Mr. Kinglake.
	Mr. Lush.
	Sir J. Ogilvy.
	Mr. Hastings Russell.
	Mr. Staniland.
	Mr. Woods.

Amendment proposed, after paragraph 2, to insert the following paragraph:—"That whereas the dividends of the Gas Companies in 1860 in no instance reached the amount of 10 per cent. on their capital, the effect of the Act was to raise the market value of their shares, and to increase the rate of dividend until, as has been shown to the satisfaction of your Committee, every company in the metropolis now pays 10 per cent., and many companies have, in addition, paid large sums in the form of back dividends, and have laid by reserve funds"—(Mr. *Morrison*).—Question put, That this paragraph be inserted in the proposed Report.—The Committee divided:

Ayes, 5.	Noes, 5.
Mr. Hartley.	Sir W. Gallwey.
Mr. Lusk.	Mr. Kinglake.
Mr. Morrison.	Sir J. Ogilvy.
Mr. Paull.	Mr. Hastings Russell.
Mr. Woods.	Mr. Staniland.

Whereupon the Chairman declared himself with the Ayes.

Amendment proposed, after last paragraph, to insert the following paragraph: "Your Committee are of opinion that the minimum illuminating power should be increased, and the maximum power reduced"—(Sir *J. Ogilvy*).—Question put, That this paragraph be inserted in the proposed Report.—The Committee divided:

Ayes, 7.	Noes, 4.
Mr. Dutton.	Mr. Kinglake.
Sir W. Gallwey.	Mr. Lusk.
Mr. Hartley.	Mr. Morrison.
Sir J. Ogilvy.	Mr. Woods.
Mr. Paull.	
Mr. Hastings Russell.	
Mr. Staniland.	

Paragraph 3.—Amendment proposed, to leave out the word "fourteen"—(Mr. *Woods*).—Question put, That the word "fourteen" stand part of the paragraph.—The Committee divided:

Ayes, 3.	Noes, 8.
Mr. Morrison.	Mr. Dalton.
Mr. Paull.	Sir W. Gallwey.
Mr. Staniland.	Mr. Hartley.
	Mr. Kinglake.
	Mr. Lusk.
	Sir J. Ogilvy.
	Mr. Hastings Russell.
	Mr. Woods.

Amendment proposed, to insert the word "fifteen"—(Mr. *Lusk*)—instead thereof.—Question put, That the word "fifteen" be there inserted.—The Committee divided:

Ayes, 2.	Noes, 9.
Mr. Lusk.	Mr. Dalton.
Mr. Woods.	Sir W. Gallwey.
	Mr. Hartley.
	Mr. Kinglake.
	Mr. Morrison.
	Sir J. Ogilvy.
	Mr. Paull.
	Mr. Hastings Russell.
	Mr. Staniland.

Amendment proposed, after the word "pound," to insert the words "each burning 120 grains an hour"—(Mr. *Paull*).—Question, That these words be there added; put, and agreed to.

Amendment proposed, to leave out the words, "as tested by the Argand burner, as defined by Clause 34 of the Birmingham and Staffordshire Gas Act, 1860 (27 & 28 Vict. c. 239)"—(Mr. *Paull*).—Question put, That these words stand part of the paragraph.—The Committee divided:

Ayes, 9.	Noes, 2.
Mr. Dalton.	Sir W. Gallwey.
Mr. Hartley.	Mr. Paull.
Mr. Kinglake.	
Mr. Lusk.	
Mr. Morrison.	
Sir J. Ogilvy.	
Mr. Hastings Russell	
Mr. Staniland.	
Mr. Woods.	

Amendment proposed, to leave out the words "four shillings"—(Mr. *Woods*).—Question put, That the words "four shillings" stand part of the paragraph.—The Committee divided:

Ayes, 2.	Noes, 9.
Mr. Paull.	Mr. Dutton.
Mr. Staniland.	Sir W. Gallwey.
	Mr. Hartley.
	Mr. Kinglake.
	Mr. Lusk.
	Mr. Morrison.
	Sir J. Ogilvy.
	Mr. Hastings Russell.
	Mr. Woods.

Question put, That this paragraph, as amended, stand part of the proposed Report.—The Committee divided:

Ayes, 4.	Noes, 7.
Mr. Kinglake.	Mr. Dutton.
Mr. Lusk.	Sir W. Gallwey.
Mr. Morrison.	Mr. Hartley.
Mr. Woods.	Sir J. Ogilvy.
	Mr. Paull.
	Mr. Hastings Russell.
	Mr. Staniland.

Paragraph 4.—Amendment proposed, to leave out from the words "appointed from time to time" to the end of the paragraph, in order to add the words, "by the Secretary of State, to inquire into the best processes for purifying gas, and to fix the maximum amount of sulphur that may be contained in 100 cubic feet of gas; and to inquire as to the best tests which should be employed for ascertaining the quality and illuminating power of gas, and to report the result of their inquiries to the Home Secretary; the expenses of such inquiry to be at the cost of the Companies"—(Mr. *Paull*)—instead thereof.—Question put, That the words proposed to be left out stand part of the paragraph.—The Committee divided:

Ayes, 6.	Noes, 5.
Mr. Dutton.	Mr. Kinglake.
Sir W. Gallwey.	Mr. Lusk.
Mr. Hartley.	Mr. Morrison.
Sir J. Ogilvy.	Mr. Paull.
Mr. Hastings Russell.	Mr. Staniland.
Mr. Woods.	

Paragraph agreed to.

Several new paragraphs inserted.

Paragraph 5.—Amendments made.—Amendment proposed, to leave out the words "abolished or greatly"—(Mr. *Morrison*).—Question put, That those words stand part of the Report.—The Committee divided:

Ayes, 5.	Noes, 6.
Mr. Kinglake.	Mr. Dalton.
Mr. Lusk.	Sir W. Gallwey.
Sir J. Ogilvy.	Mr. Hartley.
Mr. Hastings Russell.	Mr. Morrison.
Mr. Woods.	Mr. Paull.
	Mr. Staniland.

Amendments made.

Question put.—That this paragraph, as amended, stand part of the proposed Report.—The Committee divided:

Ayes, 6.	Noes, 4.
Mr. Dutton.	Mr. Hartley.
Sir W. Gallwey.	Mr. Morrison.
Mr. Kinglake.	Mr. Paull.
Mr. Lusk.	Mr. Staniland.
Sir J. Ogilvy.	
Mr. Woods.	

Paragraph 6.—Question put, That this paragraph stand part of the proposed Report.—The Committee divided:

Ayes, 6.	Noes, 4.
Sir W. Gallwey.	Mr. Dutton.
Mr. Kinglake.	Mr. Hartley.
Mr. Lusk.	Mr. Paull.
Mr. Morrison.	Mr. Staniland.
Sir J. Ogilvy.	
Mr. Woods.	

Amendment proposed, after paragraph 6, to insert the following paragraph: "The Committee is also of opinion that any penalties levied under the Act should be deducted from the dividend of 10 per cent., and should not, as now, be levied on the consumer"—(Mr. *Morrison*).—Question put, That this paragraph be inserted in the proposed Report.—The Committee divided:

Ayes, 4.	Noes, 6.
Mr. Lusk.	Mr. Dalton.
Mr. Morrison.	Sir W. Gallwey.
Sir J. Ogilvy.	Mr. Hartley.
Mr. Woods.	Mr. Kinglake.
	Mr. Paull.
	Mr. Staniland.

Paragraph 7.—Question put, That this paragraph stand part of the proposed Report.—The Committee divided:

Ayes, 9.	Noes, 1.
Mr. Dalton.	Mr. Lusk.
Sir W. Gallwey.	
Mr. Hartley.	
Mr. Kinglake.	
Mr. Morrison.	
Sir J. Ogilvy.	
Mr. Paull.	
Mr. Staniland.	
Mr. Woods.	

Paragraph 8.—Amendment proposed, to leave out from the word "Committee" to the end of the paragraph, in order to add the words "are of opinion the existing machinery of the Act for determining how far the Companies have complied with its requirements as regards the illuminating power and purity of the gas have proved to be inoperative; but this has been due not so much to any defect inherent in the provisions of the Act, as to the failure of the local authorities to comply with its requirements. The Committee has received no practical suggestions for the improvement of the penal machinery of the Act"—(Mr. *Morrison*),—instead thereof.—Question put, That the words proposed to be left out stand part of the paragraph.—The Committee divided:

Ayes, 8.	Noes, 3.
Mr. Dutton.	Mr. Morrison.
Sir W. Gallwey.	Mr. Paull.
Mr. Hartley.	Mr. Staniland.
Mr. Kinglake.	
Mr. Lusk.	
Sir J. Ogilvy.	
Mr. Hastings Russell.	
Mr. Woods.	

Paragraph agreed to.

Amendment proposed, after paragraph 8, to add the following paragraph: "That notwithstanding complaints to a limited extent have been brought under the notice of the Committee, yet that the Companies have substantially complied with the provisions of the Act as to standard of illuminating power and purity of gas"—(Mr. *Staniland*).—Question put, That this paragraph be added to the proposed Report.—The Committee divided:

Ayes, 4.	Noes, 7.
Mr. Hartley.	Mr. Dutton.
Mr. Morrison.	Sir W. Gallwey.
Mr. Paull.	Mr. Kinglake.
Mr. Staniland.	Mr. Lusk.
	Sir J. Ogilvy.
	Mr. Hastings Russell.
	Mr. Woods.

Amendment proposed, after paragraph 8, to add the following paragraph: "That the Metropolitan Board of Works and the Commissioners of Sewers respectively shall appoint an auditor to inspect the several Companies accounts, and report on any excessive expenditure shown thereby, and that if excessive expenditure is reported, such expenditure shall be referred to arbitration"—(Mr. *Lusk*).—Question, That this paragraph be added to the proposed Report,—put, and negatived.

Amendment proposed, after paragraph 8, to add the following parapraph:—"That the accounts of the several Companies shall be audited by auditors to be appointed by some independent authority, and such auditors shall be responsible for the accuracy of the accounts as annually presented to Parliament"—(Mr. *Morrison*).—Question put, That this paragraph be added to the proposed Report.—The Committee divided:

Ayes, 4.	Noes, 6.
Mr. Kinglake.	Mr. Dutton.
Mr. Lusk.	Sir W. Gallwey.
Mr. Morrison.	Mr. Hartley.
Sir J. Ogilvy.	Mr. Paull.
	Mr. Hastings Russell.
	Mr. Staniland.

Amendment proposed, after paragraph 8, to add the following paragraph: "That no new works shall be erected within the Metropolis, as defined by the Metropolis Local Management Act"—(Mr. *Lusk*).—Question, That this paragraph be added to the proposed Report, put, and negatived.

Amendment proposed, after paragraph 8, to add the following paragraph: "That no new capital shall be raised by any of the Companies to bear a higher rate of interest than 6 per cent. per annum, or any new capital to be hereafter raised for the purposes of the extension of works of existing Companies be offered to the public by public tender"—(Mr. *Lusk*).—Question, That this paragraph be added to the proposed Report, put, and negatived.

Amendment proposed, after paragraph 8, to add the following paragraph: "That the Metropolis Gas Act should be amended, to carry out the suggestion contained in this Report"—(Mr. Serjeant *Kinglake*).—Question, That this paragraph be added to the proposed Report, put, and agreed to.

Question, That this Report, as agreed to, be the Report of the Committee to The House, put, and agreed to.

Ordered, to Report, together with the Minutes of Evidence and Appendix.

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MINUTES OF EVIDENCE.

Tuesday, 24th April 1866.

MEMBERS PRESENT.

Mr. Dutton.	Colonel North.
Sir William Gallwey.	Sir John Ogilvy.
Mr. Hartley.	Mr. Hastings Russell.
Mr. Kinglake.	Sir John Trollope.
Mr. Lusk.	Mr. Woods.

SIR JOHN TROLLOPE, IN THE CHAIR.

24 April 1866.

The Counsel and parties were ordered to be called in.

The Counsel and parties were directed to withdraw.

After a short time the Counsel and parties were called in, and informed by the Chairman that the Committee would take the Order of Reference with respect to the Gas Metropolis Act of 1860 in the first instance, and would then proceed to consider the Bills in the order in which they were referred to the Committee.

Mr. *Karslake* was heard to address the Committee on behalf of the Corporation of London, on the subject of the working of the Metropolis Gas Act of 1860.

Wednesday, 25th April 1866.

MEMBERS PRESENT:

Mr. Dutton.	Sir Wm. Gallwey.
Mr. Hartley.	Mr. Kinglake.
Mr. Lusk.	Mr. Morrison.
Sir John Ogilvy.	Mr. Hastings Russell.
Mr. Staniland.	Sir John Trollope.
Mr. Woods.	

SIR JOHN TROLLOPE, IN THE CHAIR.

Mr. *William Samuel Jeffery* called in; and Examined by Mr. *Webster*:

Mr. *W. S. Jeffery.*

25 April 1866.

1. I BELIEVE you are a member of the firm of Howell and James', Regent-street?—I am.

2. You deal in very delicate goods, silk, jewellery, and articles of that class?—Yes.

3. Of the highest class?—Gilt goods.

4. From what company do you obtain your supply of gas?—The Western.

5. To what extent are your firm consumers?—To the extent of nearly 400*l.* a year.

6. Do you burn by meter?—Yes.

7. What kind of coal is your gas made from; is it cannel coal?—I believe they call it so.

8. It is reputed to be so?—Yes.

9. What is the price of it?—It is now 5*s.* 6*d.*

10. Previous to 1865, what was it?—6*s.*

11. It is now 5*s.* 6*d.* per thousand cubic feet?—Yes.

12. Up to March 1865, it was 6*s.*?—Yes.

13. Have you cause to complain of the quality of the gas?—Yes, we have.

14. Both as regards the illuminating power and the purity?—Yes.

15. *Chairman.*] What is your opinion of the quality of the gas?—At times we have not sufficient illuminating power.

16. Mr. *Webster.*] Did you find the quality such that you were obliged to alter the burners a short time ago?—We had to alter them throughout the house.

17. What was the nature of the alteration?—We had larger burners.

18. Were the existing burners not sufficiently large?—The gas was too impure to pass through the burners we had then.

19. And the change you made was to substitute larger burners?—It was.

20. Are there different kinds of burners?—They are numbered.

21. There are the Argand and the fish-tail?—Yes.

22. What were these?—We used fish-tail.

23. You found the gas too impure to pass through the burners you had, and you substituted a larger fish-tail?—We did.

24. That was the nature of the change?—Yes.

25. Was there any reason, except what you conceived to be the impurity of the gas?—We wished to get a better light if possible.

26. Did you attribute the reason of that to the impurity of the gas?—We did.

27. There was no other reason than that?—No other.

28. What

28. What was the effect, or the result of the substitution of these larger burners on the quantity of gas consumed?—I cannot say; I took no note of it.

29. Was there more consumed or not?—We have undoubtedly consumed more the last two or three years, since the burners were altered.

30. I presume if the burner was larger, the pressure being the same, there would be a larger quantity consumed?—A larger quantity consumed.

31. Is the pressure pretty constant and uniform?—No; quite the reverse.

32. Does it vary at different times in the day?—There is scarcely any pressure before sunset.

33. With regard to this question of the illuminating power, I presume we may take it, that if the pressure is the same, and the burner is larger, there will be more gas consumed?—Yes; I should say that if the pressure is on the illuminating power is not increased, it is as though air was being forced through the pipe with the gas.

34. According to your experience, a greater pressure will not increase the illuminating power?—No.

35. It will increase the quantity that goes through?—Yes.

36. If the gas were pure, do you apprehend that an increase in the quality must be accompanied by an increase of the illuminating power?—Certainly.

37. You expect that?—Yes.

38. Did you find that the illuminating power was increased by the change of burners?—A trifle; not so much as we expected.

39. Among the defects in the illuminating power which you refer to quality, is the colour one evidence?—The colour at times is almost an ochre; it ought to be nearly white.

40. *Chairman.*] The colour is bad?—Yes.

41. Mr. *Webster.*] You might call it generally a yellow light?—Yes.

42. Is it a yellow light approaching to ochre?—Yes.

43. And is that light of a kind suitable for various purposes?—It is best suited for cooking purposes.

44. But for the purpose of showing delicate goods?—It is not at all suited.

45. Of course, the best light would be as white as possible?—It would.

46. In proportion as it recedes from whiteness, and increases in yellowness, is it inferior in its quality and use for showing articles?—It is; because it has an effect on the colours.

47. Do I understand you to say, that this gas which you complain of differs very much from whiteness?—It does considerably.

48. Although you may not be a scientific man, is it your opinion that it is referable to want of purity?—Yes.

49. You have told us that this yellow light, as compared with the white light, is inadequate for certain descriptions of goods; does it produce injurious effects upon certain goods?—On nearly all goods.

50. As regards silk, what is the effect?—It takes the colour out, which is only noticed during the winter months, when we burn the gas.

51. You can speak very positively to the fact of colour being taken out of the goods?—Yes, I can.

52. In the winter, not in the summer?—Yes; if you wish to see it, I have a piece in my pocket (*producing a piece of satin to the Committee*). That appearance is all through the piece.

53. *Chairman.*] A yellow tint?—Yes.

54. Has that been soiled by other means?—No.

55. Mr. *Hartley.*] How long has it been exposed?—We have had it in the house six or eight months.

56. Where was it placed?—On the shelves.

57. At what height?—About five feet.

58. *Chairman.*] Is it kept in paper?—Yes, double paper always. We do not notice it in the summer months at all.

59. Mr. *Webster.*] These pieces are laid on the shelves?—They are.

60. One piled above another?—Yes.

61. What part of the goods do you find affected in this way?—The folds.

62. The edges?—And the edges as well.

Mr. *W. S. Jeffery.*

25 April 1866.

63. The outside part?—And the inside; that piece of goods would be put in endways.

64. You refer this to the gas. Do you observe a different effect on any part of the goods according as the edge may be exposed or not?—No; it has a general effect.

65. Will the atmospheric air produce that effect?—No.

66. These edges are probably dyed with delicate colours?—They are.

67. Can you assign these effects to any other cause than the impurities arising from the gas?—No.

68. Have you any doubt that it does arise from that?—It does not arise from any other cause.

69. From the impurity of the gas?—Yes.

70. With regard to metals, how do you find them affected?—It deposits a thin film on the metal, and unless they are removed every day it eats into the metal, so that the articles must always be re-gilded.

71. Does that necessitate your employment of air-tight cases for those goods?—Yes.

72. And caused great additional expense?—Yes.

73. What class of gilded goods are you speaking of?—Both English and foreign gilt.

74. Are they silver gilt as you call them?—There are some silver gilt. I was speaking then especially of metal gilt—brass gilt.

75. Do you find it more or less upon all gilt goods?—We do.

76. Have you some foreign gilt goods?—Yes; both French and Austrian.

77. And English as well?—Yes.

78. Do you find that there is any difference in the effect; or, is it greater on one class of gilt goods than on another?—Greater on the French.

79. Is the effect of this deposit that you speak of perceptible immediately, or does it take time to develope?—French goods will perhaps take a day or two; the English goods may not show it before a week or two.

80. But though it may take more time in the one case, as regards one class of goods, than in another, does it affect all metal goods, more or less?—It does; and wood-work as well.

81. You employ a great number of work-people, females and others?—Yes.

82. Do you find their health affected?—We do, considerably.

83. Are your rooms well ventilated?—Yes.

84. Do you attribute this effect upon their health to the impurity of the gas?—Yes.

85. I think you are well acquainted with Liverpool?—Yes.

86. You are a native of that place?—Yes.

87. And have a very large establishment there?—My father has.

88. *Chairman.*] In the same line?—Not so much gilt goods: he has a little, but not to the extent that we have here.

89. Mr. *Webster.*] I believe it is the largest establishment in Liverpool?—Yes.

90. Called Compton House?—Yes.

91. A large establishment in Church-street?—Yes.

92. Do they use gas there?—Yes.

93. Has your attention been called to the effect of the gas upon the goods; or do you find it is different there from what it is in London?—It is different. I have never heard any remark passed on the quality of the gas at all, as to deterioration of the gas.

94. Do I understand you to say that these complaints which you are now making, and referring to the impurity of the gas, have not arisen in your business at Liverpool?—No.

95. Amongst other evidences of impurity, do you find heating power to be considerable?—Yes, we do.

96. May we take it that as the illuminating power is less the heating power is greater?—That is always the case.

97. Does that heating power exist to such an extent that you find it objectionable to use it for private reading?—I do.

98. *Chairman.*] You say that as the heating power is greater the illuminating power is less?—Yes, the whiter the light the less is the heating power.

99. The heating power is greater with bad gas?—Yes, and the illuminating power less.

100. And the colour worse?—Yes.

101. Mr. *Webster.*] Have you found that to such an extent that you have occasionally used oil instead?—I have.

102. For reading?—Yes.

103. I think your private residence is at Clapham?—Yes.

104. How do you find the gas there?—I think it is rather worse than it was in Regent-street.

105. Does this injury that you speak of to the metal goods, go to such an extent that they sometimes require to be re-gilt?—They do.

106. And does it go to such an extent that they sometimes absolutely turn black?—If we would allow them to do so.

107. That would be the result?—Yes.

108. As regards summer and winter, do you find any material difference in the way in which they are affected?—I do.

109. Previous to the passing of the Gas Act of 1860, how many Companies had you?—We had two.

110. Which were those?—The London; we changed once from the Chartered to the London, for cooking and illumination.

111. Previous to 1860, were you in the habit of having gas from two Companies?—We were.

112. The Western and the Chartered, or the London?—Yes.

113. For what purpose did you use the gas of the Chartered or the London?—Cooking; and the street illumination.

114. And you use the Western Cannel gas for the internal illumination?—Yes.

115. It was after the districting that you had only one Company?—Yes.

116. Only the Western?—That is all.

Cross-examined by Mr. *Burke.*

117. Had you not the Western in 1860?—Yes.

118. And you chose them in preference to the London, and the Chartered for your delicate goods?—We had no option.

119. You had the London and the Chartered too?—Before the passing of the Bill.

120. In 1860, had you the Western too?—Yes.

121. Did you employ them?—We did.

122. Why?—Because it was a better gas.

123. You have had the Western since?—We have.

124. You preferred them when you had three companies?—Yes.

125. You say your goods suffer more in winter than in summer?—Yes.

126. There is a little more smoke in London in winter than in summer, is there not?—I daresay there is.

127. Did you ever know goods turn black in London from smoke?—I cannot say; I have not noticed.

128. You think the smoke has no effect in blackening the goods?—I have no doubt it has an effect.

129. At your private residence, you prefer oil to gas?—I do.

130. I daresay you know a great many other people who do in all parts of the world?—I do.

131. Did you ever know any gas that did not create a large amount of heat?—No.

132. Do you know that many people object to use gas in their private rooms, on account of the heat?—Yes.

133. It is a necessary incident to gas, whatever may be the quality, is it not?—It depends upon the quality.

134. Supposing you have a large body of light and flame, giving a large illuminating power, is it accompanied by heat?—It is.

135. And a great quantity of that heat is objectionable to you in your private residence?—Yes.

136. With regard to these poor ladies who suffer, do you give them a good deal of gas in the room?—Yes, we are obliged to do so.

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137. Yet, you say they suffer from impurity; do they not suffer from the heat?—Yes.

138. If you in your private house find gas objectionable, and prefer oil, perhaps the ladies would prefer oil in your establishment also?—That would not answer our purpose.

139. But you come here to tell us that the ladies suffer from impurity of gas?—Yes.

140. In your private house you tell us distinctly that you suffer from heat; why do not the ladies suffer from heat?—So they do.

141. Do you mean that their health does not suffer from that rather than from any impurity?—The heat arises from the impurity.

142. That is your view?—Yes.

143. You think that gas may be made free from it?—Not entirely.

144. You think it can be made free from a large amount of heat?—Yes.

145. Can you tell us of any gas that is so?—The Liverpool gas has less heat than the London gas.

146. Before the Metropolitan Gas Act of 1860, what were you paying for your gas?—Six shillings to the Western.

147. What were you paying to the Chartered or to the London?—I forget what it was to the Chartered; it was 2 *s.* 6 *d.* to the London.

148. Two shillings and sixpence—Yes, because we used it for cooking purposes.

149. Six shillings was what you paid for cannel coal gas?—They called it cannel coal.

150. At Liverpool it is the same coal, is it not?—I should say not, from the quality of the gas.

151. Do you know anything about it; do you know where Liverpool is supplied with cannel coal from?—That I cannot say.

152. Do you not know that the Wigan cannel coalfield is that which supplies Liverpool?—Yes.

153. Would you be surprised to hear that the same coal is used by the Western Gas Company in London?—I should not say it was.

154. That is your opinion?—Yes.

155. You are not a scientific man?—No.

156. Let us take one illustration of the Metropolis Gas Act; since 1860, the price has been reduced sixpence a thousand feet?—Yes.

157. What reduction did that make in your payment per annum?—We have not been able to judge.

158. At all events, it is one-twelfth off the price of the gas?—Yes.

159. Do you know that before 1860 the Western Gas Company were not bound to reduce their price at all?—I do not know it.

160. Supposing I tell you they were not, then you have derived from the Metropolis Gas Act the advantage of a reduction of one-twelfth the price of your gas?—Yes.

161. You stated that you altered your burners on account of the impurity of the gas?—Yes.

162. And you made them bigger?—Yes.

163. If the gas was impure, by making the holes bigger you let out more impurity?—We let more gas through.

164. You told the Committee that in consequence of the impurity of the gas you have altered your burners and made them bigger?—Yes.

165. If the gas be impure would not the immediate result be to let out a greater quantity of impurities?—No doubt.

166. How was that to operate as a cure?—Because it would give us a larger flame.

167. Do you know that by the Metropolis Gas Act a particular standard of illuminating power is required?—Yes.

168. Did you ascertain whether the Company were fulfilling their obligation under that Act?—I have asked the question.

169. Whom did you ask?—Mr. Davis.

170. Who is he?—I believe he is surveyor or superintendent of the Western Company.

171. What did he answer?—He said it was up to the standard.

172. He was an interested party. What means did you take to ascertain whether they were complying with the Act or not?—No means at all.

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173. Do you know that the Metropolis Gas Act was passed for the express purpose of giving you the means to ascertain?—I do not know it.

174. What do you want now?—We want a better gas.

175. What means have you of ascertaining whether it is better or not; what would be your means?—From the illumination we get.

176. Supposing the Company fail to fulfil their obligation in supplying gas of requisite illuminating power, what means do you suggest for compelling them?—It depends upon the power the Act gives.

177. You say you have never put the Act in operation?—No.

178. If you suspect that the Company are not giving you the gas they are required to do, why have you not done so?—We have written to the vestry of St. James.

179. And could the vestry of St. James assist you in it?—We thought probably they might assist us.

180. Do they appoint an inspector of gas for ascertaining the illuminating power and purity of the gas?—I believe they do.

181. Do they do that under the Metropolis Gas Act?—I do not know.

182. Have you any doubt that it is under the Act of Parliament that they do it?—Not at all

183. Then supposing the vestry of your parish appointed a proper chemical officer to ascertain, upon complaint, whether the Company are complying with their obligations, what more do you want?—We want a better gas for the same money; we would rather keep paying 6*s.* and have a better gas.

184. You want, of course, to get something at the expense of the Company?—We think we ought to get a better gas than we do for the price we pay.

185. Do you know the amount of gas that a Cannel Coal Gas Company is required to give; the number of candles?—I cannot say, exactly.

186. You do not know the number of candles ought to be given by a Cannel Gas Company?—As far as my recollection serves me, I believe in Liverpool it is 22.

187. Do you know that by the Metropolis Gas Act every Cannel Coal Gas Company is obliged to give 20 candle gas?—I believe it is something of that sort; I am not quite sure of the number.

188. You are not prepared to state that they have not always fulfilled that obligation in giving you 20 candle gas?—I should say from my own observation that 12 or 14 is the extent as against the Liverpool gas.

189. If from your own observation you were of that opinion, why did you not take advantage of the Metropolis Gas Act, which was framed for the purpose of protecting the public, by putting that Act in operation to ascertain whether you were right or not; let me read you the clause, "The examiner, on payment to him of a fee of ten shillings and sixpence by any consumer, shall, at his request, examine and report to him on the illuminating power and the purity of the gas supplied as hereinbefore-mentioned; and any consumer may make complaint to any magistrate with respect to the illuminating power or purity of the gas supplied to the complainant, and the magistrate may entertain and hear the complaint, and proceed thereon, according to the provisions of the Act;" having that provision for your protection, the Company being bound to supply 20 candle gas, and you suspecting that it was not more than 12 candles, why did you not put the Act in operation?—Because I never read the Act.

190. What else do you want than that which the Act gives for your security. Can you give an answer?—I cannot.

191. You say that at all times the gas is worse than at others; do you know that according to the state of the atmosphere gas will sometimes look brighter than at others?—No doubt.

192. Do you not know that in the streets at Paris, where the illuminating power is far less, the gas looks brighter than in London?—Yes.

193. So that on a foggy day the gas would look like ochre; you can see that in the street lamps?—It looks like ochre on clear days as well.

194. You say it varies; I ask you whether you do not know that with the state of the atmosphere the appearance of the gas will vary of necessity?—Yes, it will.

195. And again, with reference to your goods, do you mean to say that the sun will not take the colour out of them as well as gas?—Yes.

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196. Do you mean to say, if your goods are exposed to the atmosphere it will not affect their colour?—No.

197. Have you consulted any chemist to know whether it is from the impurity of the gas that your goods are affected?—No.

198. You come here assuming the fact?—We can prove it, because it does not take place in the summer months.

196. Do you not know that a fog in London holds a good deal of sulphur in it?—No doubt of it.

200. Would not that sulphur affect your goods?—To a certain extent, no doubt.

201. And the fog will prevail more in winter than in summer?—Yes.

202. The satin that you have produced is of a colour peculiarly susceptible, is it not, to be affected by sunlight?—Not more so than many others.

203. How long have you had it?—About six or eight months.

204. Notwithstanding this effect upon your goods, I believe Howell & James do a pretty good trade?—We are so reputed.

205. What loss have you sustained from this circumstance?—I cannot say.

206. Under whose advice did you change your burners?—I believe it was my own suggestion; at my own request.

207. Did you consult anybody as to the burner you should use?—No.

208. It was your own suggestion alone?—Yes.

209. How often have you had your burners repaired?—We have them replaced by new ones when necessary.

210. Do you always select the burner?—I determine the number and size.

211. You consulted no scientific person as to the burner you should use?—No.

212. Do you know that cannel coal gas will, with a proper burner, give out a much larger amount of carbon than ordinary gas?—I did not know it.

213. I dare say you know that, in proportion to the amount of carbon in gas is the illuminating power. Do you know that?—No.

214. Do you know why it is that cannel coal gas gives more light than ordinary coal?—Only that it is purer gas.

215. You put it on purity?—Yes.

216. You do not know the reason why cannel coal gas gives more light than ordinary coal gas?—I cannot state the chemical reasons.

Re-examined by Mr. *Webster.*

217. I suppose these burners, being of the same kind—namely, fish-tail—you would expect that by burning more gas, if it was proper gas, you would have more illuminating power?—Yes.

218. Whether the fish-tail may be the best burner or not for the purpose, the larger burner was of the same kind as that which you used before?—Yes.

219. And do you believe that if the gas had been pure you would have had a greater illuminating power from the larger quantity?—Yes.

220. My learned friend has asked you whether fog does not hold a good deal of sulphur; I suppose it holds a good deal of carbon, does it not?—From the reason, I expect, that it prevents the smoke from escaping into the atmosphere.

221. But, whether the fog is thick or not, do you believe that the gas you complain of has a larger quantity of sulphurated hydrogen in it?—I have no doubt it has.

222. You have heard it?—Yes.

223. Whether it be sulphuretted hydrogen, or whatever it may be, have you any doubt about the impurity and its effect upon your goods?—Not at all.

224. And does the effect, at different periods of the year, confirm that opinion?—It does.

225. My friend has asked you about the Act of Parliament; whether it contains powers or not, does it give you good gas?—Certainly not.

226. Did you ever hear of a great authority saying that you might drive a coach through an Act of Parliament?—Yes, I have.

227. And

227. And do you happen to know that informations laid under the clause that has been referred to have not been very successful?—I did not know it.

228. You had not heard that?—No.

229. My friend asked several questions about the reduction of price; I think that was subsequent to the introduction of this Bill of the Corporation, was it not?—It was in March.

230. Has there not been a reduction of 6 *d.* since that?—No, the reduction of 6 *d.* took place last March twelve months.

231. That was after the agitation commenced in the City, I think?—I think it was.

232. Previous to your receiving intelligence of the reduction of the gas, had you heard of the agitation upon the subject?—I cannot say; I did not make any note at the time.

233. You have been asked about the Liverpool gas; what is the price of that?—I believe 2 *s.* 3 *d.*

234. Mr. *Burke.*] Do you know it?—I will not be certain about it.

235. Mr. *Webster.*] My friend asked you whether the cannel coal was not used at Liverpool, and you said it was?—Yes.

236. And he suggested that the same cannel coal was used in London?—He did.

237. If the same cannel coal be used in London as is used in Liverpool, can you tell the Committee why you should not have as good gas in London as in Liverpool?—I cannot see any reason why we should not.

238. So far as you know, can it be assigned to any other cause than carelessness and defect in manufacture?—No.

239. My friend asked me whether you had not substituted oil entirely for gas in your residence. My question had reference to reading; do you substitute it entirely for your own reading?—Entirely; that is, in my sitting-rooms.

240. My friend asked you some questions about the heating power of gas. Do you find that the heating power of the gas has a drying effect upon the surface of the skin?—I have not noticed it.

241. Mr. *Staniland.*] How long have you suffered from this inconvenience?—We have noticed it conspicuously since the passing of the Act in 1860.

242. For five years you have been a martyr to this?—It has been gradual; I have noticed it lately; more during the last eighteen months.

243. Is it now at the highest point of inconvenience, or is it beginning to give way?—It was a trifle better when the agitation took place in the City.

244. The gas improved?—Yes.

245. You have been asked what more stringent powers you would suggest than those in the Act of 1860. Are you aware that the police magistrates, for every complaint of yours that could be established, may fine the Company 50 *l.*?—I did not know it.

246. And 10*l.* for every day it continued?—I did not know that.

247. Mr. *Woods.*] Is it within your knowledge that the gas supplied to you in Regent-street is more prejudicial to your goods than the gas supplied to your house in Liverpool?—I believe it is.

248. Mr. *Hartley.*] You can form no opinion whether the quality of the gas supplied to you is in accordance with the Act of Parliament or not?—I cannot.

249. Mr. *Morrison.*] Are you aware that there has been any dissatisfaction with the gas in Liverpool of late years?—I cannot speak positively of my own knowledge; I have heard various things, but I have not noticed them.

250. Did your father take great interest in the question?—Yes.

251. Mr. *Kinglake.*] You say you used two burners; what was the number of the first burner you used?—Number 3.

252. And the second?—Number 4.

253. A fish-tail burner?—Yes.

254. If you use gas of the same illuminating power the quantity of light will depend much on the sort of burner you use?—No doubt,

255. I do not mean the size of the burner, but the sort of burner?—Yes.

256. With gas of the same illuminating power the light that it gives and the

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appearance of the lights will depend much upon the sort of burner you use?—Yes; a bat's-wing gives more illuminating power than a fish-tail.

257. Do you know that fish-tails get clogged very often?—Yes.

258. If you do not attend to them they are likely to get choked?—Yes.

259. And not produce so good a light as you would otherwise have?—Yes.

260. Mr. *Lusk.*] I suppose you changed your burners, for the simple reason that you could not see?—Exactly so.

261. Not being able to get light you took the remedy that you thought best, and adopted a larger burner?—Yes.

262. You mentioned that the impurity caused heat. Have you considered whether that was a correct answer; might we not have heat through the medium of pipes, where there was no gas?—Of course, hot water or steam would produce it; I referred to the illuminating properties.

263. You enlarged your burners simply because you could not see?—Exactly.

264. Mr. *Dutton.*] Did you never hear of this Act of Parliament?—I had not heard of it.

265. If you consumed gas to the extent of 400 *l.* a year, you would naturally look into it to see the provisions of the Act?—I cannot say that I have done so.

266. Mr. *Staniland.*] Did you take any interest in the matter when the Bill was passed?—Not the slightest.

267. Are you aware that all the vestries in London appeared, to get clauses into it?—I did not know that.

268. Your own vestry amongst them?—I did not know it.

269. Mr. *Lusk.*] Have you any idea what a burner would be like, that would be equal to 12 sperm candles?—I only go by comparison of this gas with the Liverpool gas.

270. Have you any idea of what it would be as a business man, not as a scientific man?—I believe their standard is an Argand.

271. Have you any idea what sort of light it would be?—An Argand is equal to twelve candles.

272. Mr. *Woods.*] There has been a little confusion created in my mind by what you said about heat. I understood you to say, that the bad gas caused greater heat than the same amount of light from good gas would cause?—No doubt.

273. That is what you meant?—Yes.

Mr. *Andrew Maclure,* called in; and Examined by Mr. *Webster.*

Mr. *A. Maclure.*

274. You are a member of the firm of Maclure, Macdougal & MacGregor, engravers and lithographers?—Yes.

275. Carrying on an extensive business in London and elsewhere?—Yes.

276. At what other places?—At Glasgow, Liverpool, and Manchester.

277. Where is your place of business in London?—At Walbrook and Westminster.

278. At Walbrook, from what Company do you get your gas?—From the two Companies.

279. The Central and the City, I believe?—I cannot tell; it is from two Companies.

280. Do you employ cannel coal gas in any of your premises?—Yes, in Scotland and in Liverpool.

281. Where is your private residence?—At Walbrook-square, Notting Hill.

282. Have you cannel coal from the Western Company?—It is said to be cannel coal.

283. Having places of business in Scotland, you probably know what cannel coal gas is?—Yes.

284. From your experience of Scotch gas, do you consider that the western gas is made from cannel coal?—It does not look like it.

285. Is the gas you have in Scotland different in quality from the gas you get in London?—I should say very different in quality, much purer and giving a greater amount of light.

286. Much greater illuminating power?—Yes.

287. And with regard to affecting your goods?—I cannot speak about that; all gas is bad in that respect, I believe.

288. As regards the illuminating power, have you had particular occasion to complain both in the City and at the West End?—Yes.

289. By the West End, you mean Westminster?—I mean at my own house particularly, not in Westminster.

290. You are speaking of the City and Ladbrooke-square?—Yes.

291. Do you refer this want of illuminating power to a want of purity?—I expect so.

292. Besides the deficiency in illuminating power, have you found an unpleasant smell following the consumption of gas?—A very bad smell.

293. Not the smell of gas itself, but a smell consequent upon it when there has been no escape of gas?—When there has been no escape, but after the burning, a very unpleasant smell.

294. Will you tell the Committee under what circumstances you have observed it?—Every night when we have the gas burning in our drawing-room or dining-room. One of my rooms is narrower at one extremity than the other, and at the narrower extremity the smell is very obnoxious.

295. Have you two rooms communicating with each other, one narrower than the other?—No; in one room one part is narrower than the other.

296. And in that part you have observed the smell of which you complain?—It is very strong and particularly obnoxious.

297. As regards the quality of gas supplied by the two Companies in the City, do you observe any difference?—There is a difference; one is bad and the other a great deal worse. I do not blame one or the other particularly.

298. You do not condescend upon which is which, but you say one is bad and the other worse?—Precisely.

Cross-examined by Mr. *Burke.*

299. Which is the worse of the two Companies in the City?—I will not condescend upon that.

300. Let me ask you, as a City gentleman, whether you happen to know that one of the City Companies was founded as a Consumers' Company, to make their own gas so good and so cheap as to supply all the wants of the City much better than the existing Companies?—I am not conscious of any virtues of that kind possessed by any body.

301. Are you not aware that there is a City Consumers' Gas Company, established for the purpose of rectifying all the defects of the former Company?—Upon the representation of that Company we agreed to divide our consumption, and therefore we used this very highly-refined gas.

302-3. Is it not the fact that the Company got its existence by representing to Parliament the expediency of incorporating the Consumers' Company, who would make gas for themselves, perfect in its quality and in the most economical manner?—That was the presumption with which they went to Parliament.

304. Yet that Consumers' Company has raised its price even beyond what was originally contemplated?—That I cannot tell; I only speak as to the quality of the gas.

305. You say that all gas affects the goods?—I believe so generally; I believe that books are destroyed by gas.

306. You consider that Scotch gas is purer than the London gas?—It has a higher illuminating power.

307. And also at Liverpool?—Yes.

308. What is the legislation at Scotland and at Liverpool in reference to gas?—I cannot tell you.

309. Would you be surprised to hear that at Liverpool the standard of illuminating power for cannel coal gas is precisely the same as in London?—I do not know; I know that the difference is very marked, very apparent, from my own observation.

310-11. If you come to Parliamentary legislation, what you would desire would be, I suppose, to fix an illuminating power with some means of enforcing that power?—I believe that is ascertained by mechanical means.

312. You would desire to fix a standard of the illuminating power, and to

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compel the Companies to give gas of that illuminating power?—No; I want good gas; I do not want to compel Companies to do anything particular; we want better gas; it is vile, bad gas, at present.

313. Do you know that the standard of illuminating power from cannel coal gas in Liverpool, is precisely the same as in London?—I do not know that fact.

314. Would you think it right and reasonable that if Liverpool, on the verge of the cannel coalfield, is required to give gas of a particular standard of illuminating power, London should have a higher standard?—No, I think not, if they make gas of the same purity.

315. You are satisfied with the illuminating power, if it is the same as at Liverpool?—If it is the same quality.

316. Let us go step by step; you would be satisfied with the illuminating power if the standard is the same as at Liverpool?—I do not know anything about the standard; I ask for a quality of gas much improved to what it is in London.

317. We are now dealing in generalities; in legislation we have to descend to particulars?—I am not able to draw a Bill myself.

318. You are coming here as a witness to ask for something more than you have at this moment?—Precisely.

319. I want to see how it is obtainable?—That is another matter.

320. What is the standard of illuminating power you would require?—That is not my question at all.

321. You do not know anything about it?—No.

322. Supposing 20 candle gas to be that which scientific men say is the amount of illuminating power which should be got from cannel coal, would not that satisfy you?—No.

323. You want something more?—I want gas equal to the gas in Glasgow and Liverpool.

324. Do you know that the legislative standard at Liverpool is 20 candles, the same as in London?—I cannot say as to that.

325. Have you sought to ascertain whether the Companies who supply gas have fulfilled their obligation?—As to illuminating power, do you mean.

326. As to purity too?—No, I have not; I only came here to testify my abhorrence of the gas as it exists.

327. If you want your position to be better, I should like to know what you want more than the Metropolitan Gas Act gives you?—You should get scientific witnesses upon that point; they will tell you precisely what is wanted; they will give the Committee all the information required; I simply come here to testify my opinion as to the quality of the gas, not to give a scientific opinion as to what ought to be done.

328. You give it by your eye; but there must be a standard of quality?—That is not for me.

329. That you know nothing about?—No.

330. You have never employed an examiner to examine whether the Company are giving good gas?—No; we have the evidence of our senses. We use our eyes every day; and, working through the night, we feel severely the bad quality of the gas.

331. Have you sent for your fitter when there has been a smell of gas in your house, to ascertain whether there was an escape?—Yes; we have done everything that can be done—changing the burners and so on—to get rid of this vile effluvium.

332. Where do you get your gas from in Westminster?—I do not know.

Re-examined by Mr. *Webster.*

333. You are satisfied by your eyes and nose?—I have no other means.

334. And by your eyes and nose, I suppose, the judgment is the same as in Scotland; do you find the gas in London to be vile as compared with the gas in Scotland?—Palpably.

335. If the standard, as my friend suggests, be the same both in London and Liverpool, are there means of evading that standard in London?—It is possible; I do not know; I should think so, with reference to the Paddington Gas Company.

336. Whatever may be the legislation, as applicable to both the places, have

have you, in Liverpool, much better gas than you have in London?—Much better.

337. As judged by the eye and the nose?—Simply by that test; by no other power of measurement.

338. Mr. *Dutton.*] Have you complained of the gas that gives so bad a smell?—Repeatedly. I have changed my burners, and done everything else that could be done.

339. Did you look into this Act of Parliament?—No.

340. You never heard of that?—Only just now for the first time.

341. Mr. *Staniland.*] Shall you endeavour to put the Act in force?—If I knew the means I would do so. There have been some futile efforts made occasionally by some desperate men, but they have died off.

342. *Chairman.*] You say that you have a house of business at Manchester?—Yes.

343. What is your opinion of the gas supplied there?—I believe it is very excellent gas supplied by the Corporation.

344. They are their own manufacturers?—Yes.

345. You have no complaint to make in Manchester?—No.

346. Sir *John Ogilvy.*] What is charged?—I do not know.

347. Mr. *Morrison.*] What is the charge in Liverpool?—About 4*s.* I think.

348. *Chairman.*] You have no complaint at Liverpool or Manchester?—No; nor in Glasgow.

349. Mr. *Lusk.*] Have you any means of ascertaining whether the gas people use cannel coal or not?—I am told they do not.

350. Have you any means of knowing?—I am afraid they are all coke merchants.

351. As a practical man, you say that all you want is good light?—Yes.

352. And there is better light in Liverpool and Glasgow than in London?—Very much better. I know it well. We have to work so much at night with gas that we feel it severely,

353. As a business man, have you time to go and look after inspectors to see whether there is proper illuminating power or not?—Of course not.

354. Practically, you think that part of the Act is not of much use?—I suppose not, so far as the public are concerned; I do not think they take much trouble about it.

355. Mr. *Woods.*] You say that the gas in Manchester, Liverpool, and Glasgow, is better than the gas in London. In your trade which is the most important, that the gas should be good, or that the price should be low?—That the gas should be good, irrespective of price.

356. You have no objection to the Companies being properly remunerated if they will make good gas?—Certainly not.

357. You work as engravers?—And lithographers.

358. And for those purposes light is requisite?—Yes.

359. What do you mean by the gas people being coke merchants?—I believe all the gas proprietors are coke merchants.

360. What do you mean?—They sell coke.

361. *Chairman.*] Do you mean all the Companies?—All the Companies.

362. They sell off the coke after the gas has been extracted?—Cannel coal will not make coke.

363. Mr. *Woods.*] Do you mean the Committee to understand that the reason why cannel coal is not used has something to do with the making of coke?—Precisely; it is more profitable to use that coal which will make coke.

364. Do you say it is more profitable for the gas works to use bad coal which will make coke, than to use cannel coal and make good gas, which will not make coke?—I believe that is the reason for their not using cannel coal.

365. Have you any special knowledge on the subject?—No; I simply know that cannel coal will not make coke.

366. Mr. *Lusk.*] You were asked about the Central Gas Company; was that got up to cure all the evils of the City, and have they done so?—No, they have signally failed.

367. What inference do you draw from that?—That we want better gas by some other means.

368. You cannot trust the present Companies?—We cannot trust those who supply us now, we want something better.

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369. *Chairman.*] Do you know of your own knowledge that any efforts have been made at Notting-hill to get better gas supplied?—I believe that very considerable efforts have been made by several individuals, but they have failed, as they have not had the means of bringing together a sufficient interest upon the subject, and they have given it up in despair.

370. Nothing has been done?—Nothing has been done, to the best of my knowledge.

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Mr. *William Tiffin Iliff* called in; and Examined by Mr. *Webster.*

371. You are a medical man, residing at Kennington Park-road, Kennington?—Yes.

372. You are an examiner of gas in the parish of St. Mary, Kennington?—Yes.

373. How long have you held that office?—Five years and more.

374. Have you during that period made a great number of experiments on the quality of gas?—I have.

375. Have these experiments been directed both to illuminating power and to purity?—To illuminating power and purity as regards ammonia and sulphuretted hydrogen.

376. How many Companies supply the parish?—Two; the Phœnix and the South Metropolitan.

377. Have those Companies a testing apparatus erected there?—Yes; at a certain distance from the works.

378. At what distance?—There is one I should think nearly 1,000 yards, and the other would be rather less.

379. Probably they are erected at distances according to the provisions of the Metropolitan Act?—Yes; at convenient distances approved of by the vestries.

380. Have you made many experiments at these testing places?—I have.

381. What has been the result of those experiments?—The result has been that on most occasions the gas has been above the standard.

382. As tested?—Yes, and on some few occasions below; the South Metropolitan has been free from ammonia and sulphuretted hydrogen.

383. *Chairman.*] To which do you refer; to the standard of light or purity?—To the standard of light.

384. What is the illuminating power?—Twelve candles, according to the Act of Parliament.

385. Mr. *Webster.*] This test is the result as made by the Company's own apparatus?—Yes.

386. The apparatus that you have found at these places?—At the stations.

387. Is the apparatus adequate for the purpose of securing proper gas for the public?—I have not sufficient means for testing it to prove that; for instance, the Act of Parliament provided a certain burner, but that burner might vary considerably, and as the burner varies, still being within the standard, the gas will vary in its illuminating power. It is an Argand burner of 15 holes, but the diameter of the Argand burner, of the centre hole, and the material of which it is made, may vary, and yet the burner be within the standard, according to Act of Parliament; there may be a difference of nearly two candles between one and another, and the Act does not define that; my impression has been that there should be a model standard burner.

388. Is this apparatus confined in a close box?—Yes.

389. Is the apparatus such in your opinion as to afford a satisfactory test to the public?—No, I do not think it is satisfactory for the public or for the Company.

390. Is there any standard of pressure provided?—No, not by Act of Parliament.

391. Is the burner such as you approve for the purpose?—I disapprove of it on account of the want of definition; it may vary therefore; I may be testing with a burner which on one day will make the gas one, and on another day with another burner, it may be a different standard, I think there is a want of definition in the size of the middle aperture of the burner, and of the materials of which it is made.

392. Is the burner with which you test a burner such as is ordinarily used by consumers?—I think very few consumers use the Argand lamp.

393. Then your answer would be, that the burner you use in these experiments is not such as is ordinarily used by consumers?—I believe not.

394. Is there any pressure assigned in the Act of Parliament?—Five-tenths.

395. Is the result of the testing materially influenced by the pressure?—Certainly.

396. And in whose discretion does the pressure rest?—The pressure of five-tenths is fixed by Act of Parliament, and the pressure applied to the gas supplied to consumers varies with the Company's.

397. Then, in the testing apparatus, you have a specific pressure of five-tenths?—Yes.

398. And a particular burner?—Yes.

399. But the consumers have no control over the pressure, and have not the same burner generally?—No.

400. You have told us that the pressure is in the discretion of the Company?—I believe so, quite.

401. Does the pressure to the consumer vary very much, at different times of the day?—Certainly, according to consumption.

402. Does it vary very much with the different companies?—I am not aware of it.

403. You told us that the standard of pressure varies with the Companies, have you a scale of the pressure in the Phœnix?—The lowest pressure of the Phœnix is about ten-tenths, and it rises up as the evenings come on, to twenty-three and twenty-four-tenths, and decreases again during the night, until it comes down to the day pressure, which I believe is not more than eight or ten-tenths.

404. Then you have those different pressures, varying at different times of the day for the Phœnix Company?—Yes.

405. Does that affect the illuminating power, as judged by the consumer?—Certainly, at different times it does.

406. You have told us that the varying pressure at different times of the day, is there also a varying pressure in different months?—I think there is a varying pressure in foggy weather, in cold weather and in different months; the increased pressure begins at sunset, it will therefore vary with the months of the year.

407. Did you make any experiments in February 1863, in March 1864, and in May 1865?—I did.

408. Mr. *Burke.*] I suppose they are in writing?—I made a report to the vestry, and the Company had had notice of it at the time.

409. *Chairman.*] Have you a copy of the report you made to the vestry?—No. I have here the result of one experiment. (*The Witness handed a piece of paper to the Committee.*)

410. You say that that kind of discoloration is produced?—Yes. I think it right to say that I am sent here by the vestry of Newington to give information; not for any hostile object in any way.

411. Mr. *Webster.*] That which you have handed in is an observation made in February 1862?—On March 1st, 1862.

412. In that did you find sulphuretted hydrogen?—Yes.

413. Did you find the gas up to or below the standard?—Up to the standard, I believe.

414. But containing sulphuretted hydrogen?—Yes.

415. And also ammonia?—Yes.

416. Did you make an experiment in March 1864?—Unless I can refer to the papers I cannot state the particular day.

417. At all events, in 1864 and 1865, did you make those experiments?—I have made experiments.

418-19. Did you also make experiments on the South Metropolitan Company's gas in 1864?—I did.

420. How did you find the South Metropolitan gas to be?—On one occasion in 1864, I found it below the standard.

421. Did you find traces of ammonia and sulphuretted hydrogen?—Neither.

422. What is the price of the Phœnix and the South Metropolitan respectively?—To consumers or the parish.

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423. Both?—For parish lamps the price of the South Metropolitan is 4*l.* 5*s.* a lamp, subject to $7\frac{1}{2}$ per cent. discount; the charge of the Phœnix for a large number of lamps is 4*l.* 9*s.*, and for a smaller number 4*l.* 5*s.*, subject to no discount. As regards the private consumer, the charge of the Phœnix is 4*s.* per thousand cubic feet, and I believe the charge of the South Metropolitan is 3*s.* 4*d.*; I know it is much less than the other.

424. Is the sulphuretted hydrogen which you have spoken of very injurious?—Certainly.

425. What effects does it produce?—It produces depressing effects on the system, headaches and general discomfort; and the sulphur would act both on brass-work and on various articles in a library, such as books. I have never tested for free sulphur.

426. Sulphuretted hydrogen would produce those depressing effects on the human system, and injurious effects on books and metal articles?—Not so much on those.

427. Is that one of the impurities of which great complaint is made?—Yes.

428. I think you have some letter clips which have been hung up some time in your consulting room?—Yes, about twelve months.

429. What is the character of that apartment as regards dryness?—It was particularly dry; it was used continually.

430. Had you gas-burners in it?—Yes.

431. Did you find that those affected the clips in any manner?—I found four out of the five broken through when they were opened, after being left six months unopened.

432. What did you attribute that to?—To the sulphur in the gas; I could attribute it to nothing else; to the sulphurous acid.

433. Would the sulphur or the sulphurous acid produce that effect?—Certainly.

434–5. Did you attribute it to any thing but the impurity of the gas?—Certainly not.

436. You said that the testing apparatus at these places was not, in your opinion, one that you thought was adequate for the purpose?—Yes.

437. Was it enclosed in a box?—Yes.

438. Will you explain to the Committee how it was enclosed and what were the defects. It is enclosed in a long box, the gas being at one end and candles at the other, with a diaphragm, the centre part being oiled, and the other part white paper; by moving the candles nearer or further to the centre diaphragm the illuminating power is shown as compared with the gas at the other end. The heat of the box tends to too rapid consumption of candles; but there are defects which I cannot explain. I often find a great difficulty in fixing the gas to within one or two candles.

Cross-examined by Mr. *Burke.*

439. How many years have you been appointed?—About five years or rather more.

440. During the whole of that period you have from time to time, I presume, been engaged in making examination of the gas supplied by the Companies in your district?—I have made occasional inspections.

441. And are those two occasions that you have mentioned the only cases in which you have found the Companies at fault?—There are very few occasions on which I have found them at fault.

442. During the five years then we may fairly assume that they have complied with the obligations of the Act of Parliament?—I believe they have.

443. Is not the fact that in the manufacturing operation, in a business of that kind, an occasional accident may arise which would produce the defects which you have mentioned?—Quite so.

444. And in the five years that you have acted as inspector for your parish, you have found only two or three cases in which the Companies have been in fault?—Only a few.

445. Do you attribute that to the operation of the Metropolis Gas Act?—Attribute what?

446. The fact that the Companies have fulfilled all those obligations imposed upon them; do you attribute it to the Metropolis Gas Act?—I should think it very likely; a good deal.

447. You complain of the apparatus furnished to enable you to make the test?—Yes.

448. Have not the local authorities power to use their own apparatus?—I complain more of the Act than of the Companies; the deficiencies of the Act.

449. The Act says, "Every local authority taking a supply of gas according to this Act shall provide all proper and sufficient apparatus, machinery, and instruments for testing the illuminating power and purity of the gas;" so that the local authorities have power to appoint their own apparatus?—Certainly.

450. Then when you complain of the Companies, it is rather a complaint that you should address to your own vestry in not furnishing you with what you considered a proper apparatus?—I speak more of the faults of the Act than of the Companies; I say that there should be a defined standard Argand burner, so that you could compare one with another, not simply saying that there should be 15 holes, leaving the centre hole and the diameter free; the turmeric and lead paper should also be defined as to be moistened, which at present it is not.

451. Then the whole of your complaint is that the Metropolitan Gas Act ought to be amended to the extent of declaring what burner should be used in making the examination?—And improving the means of deciding the illuminating power, which I think is deficient.

452. You are to supply your own apparatus; therefore you may apply the very best photometer that can be produced?—We are still bound in action with the Company to use the apparatus they provide.

453. No; it says, "Every local authority taking any supply of gas according to this Act, shall provide all proper and sufficient apparatus, machinery, and instruments for testing the illuminating power and purity of the gas." Then supposing they do not provide what is necessary you can make your examinations, can you not, perfectly?—Certainly.

454. The clause says "Every local authority taking any supply of gas according to this Act, shall provide all proper and sufficient apparatus, machinery, and instruments for testing the illuminating power and purity of the gas, and from time to time shall appoint, and out of any funds applicable by them for their local purposes, may pay a chemical examiner or gas engineer, or other competent person, to be an examiner for the purposes of this Act;" you are the party fulfilling that office?—Yes.

455. "And every Gas Company shall, wthin six months after the passing of this Act, cause to be erected in some convenient place, as near as may be to one thousand yards from their works (such place, in case of dispute between the company and the local authority, to be fixed by a police magistrate upon the application of either party, after hearing the parties thereon) an experimental meter, furnished with a suitable burner, capable of consuming five cubic feet of gas per hour, with other necessary apparatus for testing the illuminating power of the gas;" there is a double obligation, is there not?—Yes.

456. The obligation on the vestry is to supply apparatus, machinery, and instruments; and the obligation upon the Company is that they shall find a particular place a thousand yards from their works, with an experimental meter furnished with suitable burners, and so on; the Companies have fulfilled that have they not?—Yes.

457. But the vestry has not?—The vestry has not.

458. There is no fault to be found with the Company then?—No, not on that point.

459. You know that any gas consumer may go to a magistrate and punish the Company heavily, if they do not fulfil the obligations of their Act?—As shown by their test apparatus.

460. Why, this Act of Parliament says distinctly that the local authority shall supply a proper and sufficient apparatus?—You are bound to give three hours notice to their engineer.

461. We are now dealing with the apparatus; you complain that the apparatus is insufficient?—Yes.

462. Then that apparatus must be furnished not by the Company but by the local body?—Even supposing we had an improved apparatus provided by the vestry, and the Company's apparatus remained as it is, that is the one which in any proceedings at law we must act upon, and therefore we should gain nothing.

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463. The Act of Parliament does not say so; you are a gentleman having had five years experience of the working of that Act, now what amendment would you say was necessary to make that Act sufficient for all the purposes of the public?—I am speaking on the part of the vestry, and I say they think the standard of candles ought to be raised, that the standard is too low.

464. Do you mean that there should be a higher illuminating power?—Yes.

465. Would that be fair, with reference to the price?—They say it is.

466. You are a gentleman of experience in these matters. Would it not be necessary, in order to have an increased standard of illuminating power, that the Companies should add to the ordinary coal a larger quantity of cannel coal?—It is possible that it might.

467. That must be the necessary consequence. Is not the cannel coal field a very limited field?—I believe it is comparatively less than the other.

468. The Wigan field is nearly the only field we have recourse to; and, supposing that to be the case, if you raised the standard of illuminating power in London to such an extent that the Companies must have recourse to cannel coal, you would put them at the mercy of the owner of the cannel coal as to the price he might charge?—I am not prepared to answer that.

469. But you can say, as a gentleman acquainted with the matter, that you could not increase the present illuminating power in London unless by mixing a large amount of cannel coal?—I may say that the standard of those two Companies is very generally 14 candles; the gas they now supply.

470. You know that by the Act of Parliament the standard is 12?—Yes.

471. The Companies invariably supply gas above that standard, do they not, to a certain extent?—Almost invariably.

472. In fact, they could not risk making up to the mere standard: it would, probably, subject them to penalties?—No.

473. So that, if you put the standard at 14, they must work up to 15 as they now work to 13, the standard being 12?—I believe, with an improved apparatus, they might go to $14\frac{1}{2}$.

474. You mean without mixing cannel coal?—I cannot explain how they make it. I only know that if the apparatus was improved, as I am told by competent chymists it can be improved——

475. We need not have anything about what you are told; give us your own knowledge. I ask you, as a scientific man, if you know anything about gas making, can you, with the ordinary gas coal, which comes from the north of England, Durham coal, give 14-candle gas?—I believe it requires a mixture of cannel coal.

476. When you talk about the charges of the Phœnix and the Metropolitan, you will admit that the more concentrated the supply furnished by any company the cheaper they can supply to the public?—Yes.

477. If a man has 100 customers on a main of a given extent, he can supply cheaper than the man who has a main of the same extent with only 20 customers?—Yes.

478. Is not that a reason of the cheapness of the South Metropolitan, that it has a more concentrated district to supply than the Phœnix?—The South Metropolitan supply a very large extent of ground, and the Phœnix have three manufactories, in different positions; therefore I presume the difference is not so great.

479. You know that the Phœnix Company goes to Blackwall, for instance?—They have works at Greenwich.

480. And you know that in the case of villas at some distance you cannot supply the gas so cheap as in a street?—No.

481. Does not that account for the fact that the South Metropolitan can sell gas cheaper than the Phœnix?—It may do so.

482. Let me take you another step. Is it not the fact that this greatly reduced price for both these Companies is attributable to the Metropolis Gas Act?—No.

483. All Companies by that Act are obliged to reduce their charges when they pay a certain dividend?—They are, but you must remember that within the last few years the residuary products of coal which before were almost useless are now at the highest value possible.

484. Are you not aware that coke is cheaper now than it has been known for some years; are you prepared to say that it is not?—No.

485. Coke

485. Coke is selling this year far cheaper than it has been selling for many years past. Will you deny that fact?—No.

486. What do you get for tar, another residual product; does it sell for more than one penny a gallon?—I am not prepared to go into that.

487. Coke is the principal residual product, is it not?—It is a very large one, and the principal, I presume.

488. Are there any others except tar and ammoniacal liquor?—Those are the principal ones.

489. What are those?—Coke and tar a few years ago were almost useless, but now with the manufacturing dyes and so on——

490. Do you know, of your knowledge, what was the price of coal tar before 1860 and what it is now?—No.

491. Do you know what was the price of ammoniacal liquor before 1860, and what it is now?—No.

492. Then why did you tell us that the residual products are dearer now than they were before; you do not know it of your own knowledge at all?—Not sufficient to give legal proof, but I do know it for all that.

493. Did these Companies make a reduction in the price of their gas by reason of compulsion by the Act of Parliament?—They have made a reduction.

494. If they can divide as much as they please we may assume that as a matter of self-interest they will go on dividing amongst themselves.—I presume so.

495. But, practically, the Company have had the advantage of a large reduction in the price of gas of late years?—The Phœnix reduced the price threepence per thousand cubic feet within the last four years.

496. And how much has the South Metropolitan reduced its price?—I believe eightpence.

497. Both reductions have taken place since the Metropolis Gas Act?—Yes.

498. Are you aware also that the Phœnix Gas Company had a Bill before Parliament last year for additional powers?—I believe so.

499. On that occasion did the vestry or any person come to complain that they were not fulfilling to the fullest extent the obligations imposed upon them?—No.

The *Chairman* said the Committee were desirous of taking the question of quality first, without entering upon the financial question.

Mr. *Burke* said that his cross-examination was founded upon the examination in chief, witness having been asked the amount charged by the different Companies.

The *Chairman* stated that the Committee desired to separate the two questions.

500. Mr. *Burke.*] Pressure has nothing, of course, to do with the question of quality of gas?—No.

501. Every Company will vary its pressure according to the amount of gas that it has to supply?—Certainly, and the area to which it has to supply gas.

502. Therefore, a variable pressure is a necessity in the supply of gas?—Yes.

503. Then the pressure under which you make your experiments is limited to five-tenths?—Yes.

Re-examined by Mr. *Webster.*

504. I understand you to say that in these experiments the pressure is constant?—Yes.

505. But that the variation of pressure, as supplied to the consumer, introduces another element which is not provided for in the testing?—Yes.

506. Is that one ground upon which you found your objection that the testing apparatus is inadequate?—No, I am not prepared to say that the Companies can give any set scales.

507. You say that the testing apparatus provides for a pressure of a certain amount?—Five-tenths.

508. But that, as supplied to the consumer, there is necessarily a varying pressure?—Yes.

509. Is it necessary, if a proper test is to be supplied, that the provisions of

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that Act of Parliament as regards pressure, should be varied in some respects? —I am not prepared to say so.

510. Notwithstanding the result of these experiments, such as you have given them, are you aware that the gas in that district as supplied to the consumers, has not been good?—I am aware that there have been many complaints.

511. Mr. *Kinglake.*] Of both Companies or one?—Of the Phœnix chiefly.

512. Mr. *Webster.*] You have told my friend that the residual products have become useful lately; are coal tar, and ammonical liquor the principal residuary products?—And the coke.

513. Mr. *Staniland.*] Do you suggest an alteration in the gas?—Yes.

514. You suggest that the illuminating power should be increased, and in order to accomplish that you say that there must be an increase in the consumption of cannel coal?—Yes.

515. And you say there is a want of definition in the kind of burner?—Yes, and that the turmeric and lead-paper should be moistened.

516. Are you acquainted with the provisions of the Gas Act of 1860?—Yes.

517. Are those the only particulars in which you suggest that an alteration should be made?—The other point was, I believe, that a better apparatus should be made.

518. You have not tried one?—No.

519. The Act provides for it, and you have omitted to provide it. Those are the only two particulars in which you can suggest an alteration?—Those are the principal points.

520. Are there any others?—I think perhaps not.

521. Mr. *Woods.*] Do you know enough of the manufacture of gas to be able to inform the Committee whether it is really requisite, that cannel coal should be employed to make better gas?—Perhaps I had better say not.

522. You are not sufficiently well acquainted with it?—All I can say is, from what I have heard from the engineers at different times, I am not prepared to say from absolute knowledge that it requires an increased quantity of cannel coal.

523. Is it within your knowledge, as a scientific man, that the residuum is more useful than it used to be?—Yes.

524. Sir *William Gallwey.*] Many parishes have not even appointed examiners, I believe; do you know that of your own knowledge?—I believe some on the south side have not; I think St. George's, Southwark, has not, and Bermondsey has not; Lambeth, Camberwell, and Newington have.

525. They have appointed testing apparatus of their own, or have they trusted to the Company?—I believe they have trusted to the Company entirely.

526. Mr. *Lusk.*] You say that you do not find there is much the matter, as a rule?—Yes.

527. Have you examined often?—Only perhaps once or twice a month at each of the places, unless I have found the gas bad, and then I have gone the next day, and the next day but one.

528. *Chairman.*] How often do you make the examinations?—Once or twice a month.

529. Mr. *Lusk.*] Was that when you were asked?—No; at my own times and at my own hour.

530. *Chairman.*] You were not required by your vestry to go at any specific time?—No; and the Company have always waived the three hours notice.

531. You have been allowed to examine at any hour?—Any hour of the day or night.

532. They have given you every facility?—Yes.

533. Mr. *Lusk.*] You may employ your own apparatus; is that so?—If we had a test-room fitted up by the vestry I might; but it requires a room and all the apparatus, and I carry it about with me.

534. Suppose you applied your own apparatus and you differed from the Company?—I presume then that in law we should have to go by the Company's test.

535. Your apparatus would be worth nothing?—I believe so; that is my impression.

536. You say that there have been a great many complaints of the bad gas in your neighbourhood?—Yes.

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537. Mr. *Hartley.*] Is that an exceptional case or is it the general rule, the experiments that you have handed in?—It is exceptional.

538. Do I read it correctly that you found no trace two hours afterwards?—On the 2d March; this was on the 1st.

539. Mr. *Woods.*] You recommended a higher illuminating power, why did you do that?—Because, when I found the gas to be one standard for private consumers, it seemed to be so insufficient for useful purposes.

540. You found that the gas which was up to the standard required by the Act, was not of sufficient illuminating power for domestic purposes?—Yes.

541. That is the reason why you recommended a higher illuminating power?—Yes.

542. You were asked whether you recommended a higher illuminating power with the same cost; do you give any answer to that question?—That would be a question of finance that I could scarcely go into.

543. You do not give an answer to that question?—I am not prepared to do so. The gas is usually a higher standard than required by the Act, and I should like to see it fixed as such.

544. *Chairman.*] Still you have complaints made?—At times.

545. Have you found them well grounded?—I have found the gas at my own house on one occasion so low, that I could scarcely read, and at the meter it marked 14 candles at the Gas Company's station. The street lamps at the same time showed the same deficiency.

546. Mr. *Lusk.*] Still the Company's testing apparatus was all right?—Yes. I presume there was something in the main interfering with the light between the testing room and the supply.

547. I find that sometimes I cannot see to read by gas in the evening, and at other times I can; can you tell me the reason?—Sometimes it may be by a mixture of air. They have exhausters and air may get into the pipes, or there may be repairs; a mixture of air will certainly diminish the illuminating power.

Mr. *Edward Daniel Johnson* was called in; and, having been sworn, was Examined by Mr. *Sargood*, as follows:

Mr. *E. D. Johnson.*

548. You are a chronometer maker?—I am.

549. Do you carry on your business in Wilmington-square, Clerkenwell?—Yes.

550. I believe you are in extensive business as a maker of chronometers?—Yes.

551. Were you one of the jurors at the Great Exhibition?—I was.

552. I believe you are appointed one of the Associate Commissioners for the Paris Exhibition of next year?—I am.

553. Have you had occasion in the conduct of your business for many years past, to take notice of the quality of gas, and of its influence upon your goods?—I have.

554. Taking the illuminating power as apart from the quality, have you found that of late years better or worse than it used to be?—Very much worse.

555. From what period of time have you noticed a decrease of illuminating power?—I could not tell you with any degree of accuracy, because I have not been observing for any special purpose; I can only tell you generally that the illuminating power has been steadily decreasing for a long time.

556. Mr. *Hartley.*] What Company are you speaking of?—The Imperial.

557. Mr. *Sargood.*] I believe you deal now exclusively with the Imperial?—I am compelled to.

558. Formerly, did you obtain gas from two Companies?—No, never, but from one.

559. Which was the other one; do you remember the name of it?—It is a great number of years ago, before I removed my premises into Wilmington-square.

560. Then I won't trouble you about that. I believe you are rather a large consumer?—Not what would be called a very large consumer; 24*l.* or 25*l.* a year.

561. Do you use two meters?—I do.

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562. Can you tell us any peculiar observations you have made on the appearance of the gas as to its illuminating power beyond the mere decrease of light; is there anything in the colour and so forth?—They are immediately connected; the decrease of light arises from the diminution of the upper or luminous part of the flame; the flame may be as large, but all the upper part is blue, or a sort of gray; it is the upper part from which we derive our illumination.

563. Is it that you have found the upper margin diminished, or that the inner and non-luminous part has increased?—The latter; of course, with the same sized flame, that implies a diminution of the outer margin.

564. I believe you use the gas simply for the purposes of illumination?—I do.

565. Not for domestic use?—Not at all.

566. What sort of burners do you use?—Both Argand and fish-tail.

567. Which do you use for the purposes of your business?—Both of them.

568. And have you observed a like decrease of illuminating power in each sort of burners?—Yes, but it is perceptible through different reasons.

569. Perhaps you will explain your view as to that?—I cannot tell you technically how many holes there are, but I use the small Argand burner, where I use the Argand burner at all; I did formerly use the Argand burners throughout my dwelling-house, but I removed them entirely out of my dwelling-house in consequence of the large amount of damage done to ceilings; they blacken very quickly, and I purpose removing them entirely out of my workshops because, for the amount of gas consumed, the light is very insufficient; there is a low character about the whiteness of the flame; it is not white in fact at all.

570. Then which of the burners do you find most advantageous for the purpose of your business?—Anything that spreads the flame sufficiently, either the bats-wing or the fish-tail.

571. Now, with regard to the question of purity, have you found the gas affect prejudicially any part of the materials you use in your trade?—Very much so indeed.

572. Will you tell us what sort of material is most readily affected by it, as far as your experience goes?—Brass.

573. And what is the effect produced by the gas upon brass?—Deep corrosion, which does not appear to stop on the surface, but eats into the body of the articles; I do not know to what extent, simply because I was obliged to take precautions against it before it went too far.

574. I suppose, in a pecuniary point of view, that is a serious damage to goods in your trade?—Certainly.

575. Have you found any particular action upon the metal of the chains by which gaseliers are hung?—Yes.

576. Will you describe to the Committee what your experience has taught you in that respect?—I should simply call it rotting them.

577. Do you speak from your own personal inspection and knowledge of that subject?—Oh, yes; in fact it is not the mere question of chandeliers, it is the question of every species of household furniture made of metal; curtain rings, furniture rings, gas fittings, in fact anything that is left exposed to the influence of the gas; even if it do not show it, it will take that appearance (*producing a specimen*).

578. What is that illustration?—This is merely a piece of an instrument that has been left about unprotected by lacquer.

579. Perhaps you will hand that to the Chairman. Do you attribute that black appearance to the corrosion caused by gas?—There cannot be a doubt of it.

580. And is that the mode in which the finer materials that you use in your business of a chronometer maker are affected?—I did not allude to any finer materials; I may explain we use of course silver, but silver has such a very strong affinity for sulphur, that we never dream of complaining of anything that may happen from that, because we should attribute all the blame to ourselves if we did not secure it.

581. However, with regard to other materials than silver, they are prejudicially affected in the same manner?—I do not know anything that we use that is in the same category at all with brass. Iron is comparatively free of the effect. Iron and steel it scarcely affects at all, and those are the hot

other two principal materials we use. Of course if we use aluminium or anything of that description, we know we must protect them from atmospheric influence.

582. *Chairman.*] What time has that taken to accumulate?—I cannot tell you, but as a reply to your question, which will enable you to form a judgment, I will state this:—The internal case of the marine chronometer is made of simple brass, and having manufactured any number of them, we are compelled to put them away, wrapped in double and treble paper, in glass cases to prevent that action going no, in a very short time, to such an extent that we should have to re-turn them in the lathe.

583. If exposed?—If exposed.

484. Mr. *Hartley.*] Can you tell me whether that is sulphate of copper or carbonate of copper?—I should say it is a mixture. I should imagine part of it was attributable to sulphuric acid, and part to the action of ammonia.

585. Mr. *Sargood.*] What is that piece of metal?—Simply part of a species of protractor for laying out large work.

586. We are now on the subject of the quality of the gas. Are you sufficiently acquainted with the mode of purifying gas to suggest to the Committee what it is, or the absence of what it is, that has caused the supposed deterioration in quality?—Well, yes; as a mere consumer, in the first place I know by experience that the same effect will be produced on gas that I complain of, the lowering of the illuminating property by mixing it with a considerable quantity of atmospheric air before burning it; I do not mean the making an explosive compound, but mixing it sufficiently; the reason I know it is this; I have a little apparatus by which we conveniently mix coal gas with atmospheric air for the purpose of hardening small steel bodies; the first operation, of course, before plunging them, as no doubt you are aware, is to heat them to a certain degree, then although the illuminating power of the gas, namely, the carbon, does not give us a great deal of light, there is scarcely any light in such a prepared flame; it gives us a higher degree of heat, so great a degree of heat that you may hold a polished piece of metal in it, and it will not smut; no carbonate is deposited on it; you may hold it until it is red hot, and you will have no deposit of carbon on the surface. There appears to me to be some connection, in effect, between such an artificial produce, and that which I observed in the case of the burners; whether that be sufficient to account for the low illuminating power or no, of course I leave to expert chemists to say; but its effect is this, that to produce the amount of light we require, of course you must consume more gas, and we do not do that to any greater extent than we can help, to avoid the ingress of a larger amount of poison, because the more gas we let into the place the more products we have to contend with. In my own case, I have not to contend with it, through any defective ventilation, for I have not a room in my house, nor a passage, nor a part of my workshops that are not thoroughly ventilated; every apartment close against the ceiling has its Arnott valve, so that every place is taken care of; therefore I am only speaking now of a reasonable and average quantity.

587. Is it consistent also with your experience generally that the loss of illuminating power is attended with an increase of heat?—Only through my own fault; only in the endeavour to get more light, I must submit myself to more heat. You cannot burn more fuel without getting more heat.

588. So far as we may trench on the question, if I am not exceeding your limit, of course the increase of burners to compensate for want of light, is attended with an increase of expense?—It must always be so.

589. Are you acquainted with the mode by which the Gas Companies attempt to purify the gas?—Only by answers made to myself to an inquiry that I made some time ago. It occurred during the winter, I think it must be four or five years ago, when I was frozen out through using dry gas-meters, by what I conceived to be solidification of naphthaline in a pipe crossing the area of my house. I took the precaution of heating it with some hot water, and subsequently I encased it in non-conducting material, such as sawdust, and have not been so inconvenienced since. But at that time I went across to the Chartered Company in Brick-lane, and saw some gentleman, I think the engineer connected with the Company, and asked him the question, whether he could help me; I wanted, as we do in all other businesses, everybody would serve me the same; I wanted to change and get away from those who did not serve me well, if I could. I was

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told I could not, so that there I have been ever since. I inquired somewhere about the same time as to the mode of purifying, I am acquainted sufficiently with the manufacture of gas.

Mr. *Richards* objected to the answer by reason of its being hearsay evidence, and matter on which he could not cross-examine.

590. *Chairman.*] (To the *Witness.*) Are you aware of the mode adopted by gas Companies to purify gas?—I am aware of it; that is what I was coming to.

591. Mr. *Sargood.*] Is there more than one means of doing it?—Yes.

592. Are you aware of the Companies having made any change in their mode of purification by substituting one article for another?—Am I precluded from answering that question, by stating answers to my own inquiries, or must I know it by going into the yard and seeing it.

593. *Chairman.*] Do you know from your own knowledge how it is done?—Certainly; to that extent I am a chemist.

594. State the mode?—The original mode of purifying coal gas was by passing it through hydrate of lime, and I am told that the practice has been very largely departed from by the substituting for it of oxide of iron, and that I know, as a chemist, is a much weaker purifier.

595. Do you know from your own knowledge that they do purify by oxide of iron?—Certainly not; they do not admit strangers into the gas yards.

596. You could state this; that if so purified, it is not so good a purification as lime?—Exactly so; that is the point.

597. Mr. *Sargood*] Then I would ask you, you having a chemical knowledge, and very likely a knowledge as regards expense, is it cheaper to purify by the iron than by the lime; do you know that?—Well; I should require that question itself amended; if the article is to be half, quarter, or a third purified only, then I should say there was a saving, but not a cheapness, because I am not one of those who want any cheaper gas; I want better gas.

598. Are you also a consumer of coke to any extent?—I was, as long as I could get coke that would burn.

599. Have you ceased to be able to obtain coke that will burn?—Yes, except it is specially burnt coke—coke that we use in the manufactory; but the gas coke I cannot burn at all; I do not know anybody that could.

600. Can you attribute that to any cause in the course of manufacture?—I can only attribute it, as a matter of common sense and judgment, to the employment of an inferior or more dirty coal, which would naturally produce worse coke, fuller of clinker; and the whole of the bulk of the coke was tolerably contaminated with that material; I mean the last quantity, being a waggon load, that I had in; it was impossible to burn it.

Cross-examined by Mr. *Richards.*

601. Then you do not agree with the gentleman who said the Gas Companies are coke merchants?—Very bad if they are.

602. As far as you can see of the coke, there seems to be no disposition to sacrifice the gas for the sake of making good coke?—No, I should certainly say not.

603. You said that the per-oxide of iron is not so good a purifier as hydrate of lime?—I did.

604. Do you think it desirable that the Companies should return to hydrate of lime?—I do; very desirable.

605. Are you aware that the use of per-oxide of iron, instead of hydrate of lime, has been forced upon the Companies for some years past?—No.

606. Are you aware that the mixture of gas charged with sulphuretted hydrogen through the hydrate of lime produces the most obnoxious compound, commonly known as Blue Billy?—I never heard of Blue Billy before in my life.

607. Am I to understand you profess to know anything about the chemistry of gas?—No.

608. Do you know anything about chemistry at all?—I leave you to judge.

609. Do not leave me to judge; I should draw a very unfavourable opinion. Do you know anything about the matter except what you have been told by the

inquiry

inquiry by gas engineers?—I should presume you do not want me to go through a list of the volumes I have read upon the subject.

610. I want to know whether you consider yourself a chemist in any degree?—Oh dear, no; I would not presume to call myself a chemist.

611. How long have you suffered from this deterioration in illuminating power and bad gas that you talk of?—Two years.

612. How many complaints have you ever made on the subject during these long years?—To whom.

613. To the Gas Company, the secretary, or anybody connected with it?—I cannot tell you how many, but I have only a mental note of one.

614. You have a mental note of one; now, does the mental note go to the extent of saying at what date that was made?—I should say it was in the winter time, the period that I before alluded to; I should think about five years ago.

615. One complaint in the winter time about five years ago?—It may be only four years ago.

616. Was it before or after the Metropolis Gas Act?—Oh, since that, because I was told it was the result of the districting.

617. Was that the complaint about the naphthaline?—At the same time I mentioned about the low illuminating quality.

618. Are you chemist enough to suggest any mode by which naphthaline could be got rid of?—Oh no.

619. You might make your fortune if you could?—I was told so at the works.

620. You were told that if you could suggest any mode by which naphthaline could be got rid of you might make your fortune?—Yes.

621. To whom did you make the complaint of which you have got a mental note?—Oh, I did not go to make any complaint.

622. I thought you said you did make a complaint?—The complaints were to the ordinary inspectors; I went to make an inquiry at the other gas works in the hope if possible of changing my custom to somebody else.

623. But finding you could not do that, and having suffered for these long years, have you ever made any complaint to the Company, and asked them to rectify what you complained of in any way?—Through their inspector, yes.

624. Is that upon the one occasion you mention, or more?—Oh no, a great number.

625. But you have never written to the secretary, or taken any step of that sort; are you aware whether the parish of Clerkenwell, in which you live, have appointed any inspector under the Gas Act?—I am aware they have not.

626. Do you know anything of the provisions of the Act, or have you never looked at it?—I have looked at it; I have not studied it much.

627. You are aware the parish have the power of appointing an inspector, but they have not done so?—Yes.

628. Have you ever complained of your gas to the vestry or to the local authorities of your parish?—No.

629. Do you know the Metropolis Gas Act says a little more than "that the local authorities may provide," but "every local authority taking any supply of gas according to this Act shall provide"?—Yes.

630. Nevertheless your parish have not done so; they have not appointed any inspector; now may I ask whereabouts has that piece of metal which you have produced been lying in your place?—In my office on a shelf.

631. How many years?—I cannot tell you.

632. Do you mean to say that you cannot tell whether it is one year or two?—Certainly, yes.

633. I want to know?—It may be a year.

634. It may be two?—I will tell you directly; no, it can hardly be two.

635. I dare say it is not far off; you state that you attribute the blackness of it to the corrosion produced by gas; what part of the gas is it that you attribute this corrosion to; would all gas do so, or is there any defect in the particular gas?—I should say a defect in the particular gas.

636. What is the defect, excess of what or absence of what?—Excess of sulphur.

637. You attribute it to excess of sulphur?—Yes.

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Cross-examined by Mr. *Webster.*

638. You told my learned friend that as to one particular cause of dissatisfaction you were told it was the result of districting. Just let me understand clearly what your cause of dissatisfaction was that was so answered?—The bad illuminating power of the gas, and in that particular instance I may mention the fact of my having been frozen out, as I denominated it, but it was principally in consequence of the very low illuminating power. My desire was, if I may be allowed to say so, to change to some other company, who, if competing, would no doubt have done better for us, but I was told there was no help for me, inasmuch as they had no power to supply me. I was in So-and-so's district, and they could not help me.

639. You do not mean that the low illuminating power arose from the districting, but that your inability to help yourself was the consequence of the districting?—Exactly.

640. Mr. Alderman *Lusk.*] You are not a chemist?—I am only a chemist to the extent required by my profession; I am not a professional chemist.

641. You are simply a business man using gas?—And also a manufacturing man.

642. Compelled to use gas?—Compelled to use gas.

643. Now do you say that this gas which you get is fit, as a rule, for useful purposes?—For illuminating.

644. Sufficient illuminating power for the general use of the public?—It is very low indeed, certainly not what it ought to be. I am tolerably well acquainted with the external appearance of gas throughout the whole country; I have visited in the course of my profession nearly all the large towns.

645. Is the gas supplied to you of a sufficient illuminating power for useful purposes?—Still we are always envious of a better supply even to our neighbours, and I observe that in large towns, Edinburgh, Glasgow, Liverpool, and Manchester, the gas always appears to be far more brilliant. I infer from that that to get the illuminating power that we require we must use a great deal more; consequently it at first flies to my pocket.

646. You wanted to change your supply; to get some one else to supply?—Yes.

647. Do you mean to tell me that you cannot get any other Gas Company to supply you?—That is what I am told, I am bound to believe it.

648. Is that a monopoly of gas?—That is my ground of complaint through which I have volunteered my evidence.

649. Then if you are wronged by the Company supplying you, you have no remedy at all?—This is one of those cases in which we have not till Parliament gives it us.

650. Mr. *Staniland.*] What is the wrong you cannot remedy?—I am compelled to use the gas of whoever happens to have the district handed over to them.

651. Mr. Alderman *Lusk.*] If you have a grievance, and you are not satisfied with the person supplying you with gas, you have no remedy except coming here?—None at all; I know I have a remedy to this extent, that I could if I chose lay an information on the subject to the proper authorities, but then my father was a lawyer, and he left me a valuable legacy, and told me to keep out of it if I could.

652. Do you think practically this inspector of gas is of much use to the public?—I do not.

653. You think not?—I do; I have reason for saying it, because I never heard any two gentlemen agree as to the accuracy of the photometer.

654. Do you think this Act of 1860 is defective in that respect?—Very, I should be more satisfied if I could hear a great number of inspectors agreeing that it was a standard of reference, but they do not agree, and I cannot disbelieve the evidence of my own eyes, that the diminution of light is a serious matter.

655. Practically you say the inspectors are of very little use?—I do not wish to insult them by saying that, but I think they could be made of a great deal more use.

656. Mr. *Staniland.*] You have not appointed an inspector in your district?—I have not.

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657. So that you do not know whether he would be useful or not?—We had the power given us in our district some time ago of employing a professional analyst in relation to the adulteration of food, but we found we could not make no earthly use of it after we had it.

658. Sir *William Gallwey.*] Do I understand you to say that bad coke is a proof that the company use improper coal?—I do not know about the impropriety, it simply indicates dirty coal.

659. Do you know whether dirty coal is proper?—I should infer not.

660. Do you think that good or bad coke is a standard by which we should judge the quality of the gas?—Well, scarcely.

661. I thought your answer would lead us to infer that if bad coke came there was also bad gas?—It would come in a measure to that, but then there is a question as to the proportion of cannel coal used.

662. Mr. *Staniland.*] You say you should like a greater illuminating power; you have not at present, you say, a sufficient illuminating power?—We have not.

663. Do you mean in reference to the standard fixed by the Act?—I do not know anything at all about a standard fixed by the Act.

664. What you say is, you would like to have better gas?—Yes, and the most perfect photometer in the world is the eye.

665. And then you would rather have no monopoly, as you describe it; free trade, all Companies coming into your district if they thought well, and paying any price that they chose to exact, so that you could get good gas instead of having the reduced price, and the monopoly which you say now exists?—I think free-trade would remove every objection; we have never complained of the price of gas.

666. Mr. *Dutton.*] Taking the question as between the Companies themselves, do you think it would be advisable to bring two Companies into one district?—I think the only protection the public can possibly have is by competition, but I should rather that there should be no legislation.

667. Then you would look upon this as a consumer's question?—Yes.

668. Not so much a question with reference to the quality of the gas as a general question?—Oh yes.

669. You would look upon it through the question of quality?—Purely through a question of quality.

670. And you think the consumers ought to have the advantage in a district of going to two or three Companies?—Yes.

671. Sir *William Gallwey.*] Were not all the gas consumers a few years ago competing in every district?—I cannot tell you.

672. It is notorious that they were?—Nevertheless, I only answer to what I can.

673. You did not seek the change some few years ago?—I did not.

674. It is notorious they were all competing in every district?—I did not seek it, and I burnt gas both in the country and in London; I was quite satisfied with the illuminating power.

675. Mr. *Woods.*] You say, "I want not cheaper but better gas." Then you have no objection, of course, to the gasworks being properly remunerated for making you good gas?—Most assuredly not.

676. And in your trade you can afford to pay a good price for gas if you have a good quality secured to you?—Yes.

677. And if you have a good quality secured to you by any means you have no wish to higgle about price?—No.

678. We distinctly understand that?—Yes.

Mr. *James Medwin* was called in; and, having been sworn, was Examined by Mr. *Sargood*, as follows:—

Mr. *J. Medwin.*

679. You are carrying on the business of a boot maker, I believe, in Lombard-street, Regent-street, and St. James's-street?—No, not in St. James's-street; in Regent-street and St. James's-street.

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680. Are you a member of the vestry of St. James's?—I am.

681. I believe you happen also in the City to be a common council-man; a member of the Corporation?—Yes.

682. You, I think, were one of the jurors for the Great Exhibition, and for the prospective one with regard to your own particular trade?—It is so.

683. Were you also, at the time of the agitation in 1860, one of the gas delegates from St. James's?—I was.

684. I suppose, by combination of these positions, you are pretty well acquainted with the general views on the subject of gas of your neighbours and those who live in the same place?—I ought to be.

685. But I ask you if you were?—I am scarcely an authority in the matter; I suppose I may be.

686. Now, generally, with regard to the Act of 1860, do you consider that you have had a better or a worse light since the passing of that Act?—Decidedly worse.

687. Without going into details, is it also decidedly dearer?—Very dear; I think in comparison with what it was previously.

688. Now, with regard to the absence of illuminating power, in what respect have you found that; is that from personal experience in your business?—Yes.

689. Just tell us what you have had occasion to complain of?—I have found that at different periods of the afternoon and evening, when gas was required, that I have not received through the pipes of double the essential size one-half of the needed supply, sometimes not one half; but on many occasions we have not received the supply that we require, that we should and would have consumed.

690. Mr. *Woods.*] You speak of pipes within your own premises?—I speak principally of the size of the pipes conveying gas from the main to my premises, and the others are various in size.

691. Mr. *Sargood.*] You are speaking of the supply to the interior of your own premises?—I am, and I also find that the gas, instead of being of a white character, is very frequently of a yellow, sometimes almost of a slight orange colour.

692. What Company do you have your gas from?—In Regent Street, from the Chartered Gas Company, and in Lombard-street, from the City of London Company.

693. The Gas Light and Coke Company, I think it is called?—I am not sure whether that is the necessary adjunct.

694. Have you found the same cause of complaint with regard to the consumption in each place?—I think there has been a greater deficiency of supply in Regent-street than in Lombard-street.

695. When you speak of deficiency of supply, do you speak of the quantity of gas?—Yes.

696. That on turning your burner up to the full extent, you do not get enough gas?—I do not.

697. That is a question rather of quantity than as to the illuminating power. Then I suppose, at some other period of the day, you would get enough?—For some whole evenings I think we have not had nearly the supply we have required, but, during the same evening, the supply of gas varies very much indeed. In the early part of the winter evenings the deficiency would be very great, between what we should use and what we should use if we had it.

698. But when in the course of the evening you do obtain what you consider a sufficient quantity of supply, do you still find that the illuminating power is not what it used to be?—Certainly not. The flame is of a colour different from that from which I should expect to get a larger light.

699. I presume you have always, presuming you were dissatisfied with the parties you dealt with, no means of changing?—Oh, not at all; I should be very glad to have the opportunity, but the monopoly is an entire thorough despotic one, such an one as I do not know of as existing in any other part of our commercial or social polity. No doubt the Bill of 1860 is altogether un-English and improper in principle.

700. However, you attribute that to the system of districting?—I do. It places the consumers entirely at the mercy of the Gas Companies.

701. Now, we will come to another point,—the question of the quality of the gas.

gas. Do you find any injury to the goods that you use in your trade; I suppose that would be principally leather?—Yes. I find it very destructive to the goods in my business.

702. What effect is produced upon the goods?—It produces perfect rottenness in the leather having been exposed to it for a given period or for any period. I should say for any short period its effect is very injurious, but for more lengthened periods entire rottenness takes place.

703-4. Do you believe that to be attributable to some deleterious influence in the gas itself?—I know it is. As an illustration, I have sold hundreds of pairs of boots which I had manufactured, costing me from 18*s.* to 20*s.* I have sold them at 1*s.* and 1*s.* 6*d.* a piece. The whole of them perished—destroyed by gas; and out of a given number, some time since, one pair would have sold for 6*d.*; and I retained them as a specimen.

705. Have you them with you?—I have got them with me.

706. Let us see the effect on the leather?—I can also testify to the effect upon brass. (*The Witness then produced a boot.*) This boot has never been upon a foot to my knowledge, and yet that is the character of it (*tearing the leather*). That is a new boot. (*The Witness tore up the leather and distributed the leather to the Committee.*)

707. Mr. *Woods.*] What length of time was that boot subject to the influence of the gas?—For some years I should say; it is like blotting-paper.

708. Just tell me seriously, do you never find that the leather of boots rots in this manner from any other cause?—I have had boots in my possession which I believe have been made, some 200 to 300, and during that time I should think have been exposed to the action of the atmosphere, and the material of these boots has been as good apparently as on the day when they were manufactured; but then they had never been exposed to the action of gas.

709. And you conscientiously believe that the miserable state of the leather which we now see has really been produced by the gas?—You may prove it for yourself, if you apply it to your tongue you will taste the sulphuric acid. I gave two inches once to Dr. Letheby for the purpose of analysis out of these same boots, and his report was that in the two inches square he detected 10 grains, as he describes it, of the vitriol of commerce. He said it corroborated the opinion which he had long held, the opinion to which he was principally led by an analysis of the coverings of books in the library of the Athenæum Club, that those coverings were entirely destroyed by the same process which had burned and rotted this leather; but its effect to a very great degree is to be seen upon wood which has been kept within reach of the gas.

710. Mr. *Sargood.*] What have you seen then with regard to that?—I have seen wood under the action of gas in 15 years disintegrated, not dry rot or anything of the sort, but the fibres remaining in their lengthened form, and you could pick them to pieces with your nail. I believe that where gas is used extensively, and continues in use for a long period, say 100 years, that it will be found most of our , exposed to its action, will become dangerous and rotted through its influence.

711. You said you could also tell us something of its effects upon brass and other metals, what have you observed personally as to that?—That brass subject for a period to the action of gas, that originally was calculated to take a strain probably of one hundred weight, you could squeeze it together in your hand, perfectly rotten.

712. When you say rotten, I hardly understand that as applied to metal; explain more fully the effect you mean?—In appearance; the metal would cease to have the appearance of brass and be changed through its whole substance into the character of a mixture of brass to a sort of bronze of a dark colour. In fact, the granulated brass appearance would be gone altogether, and there would be a green tinge resulting from the sulphur I apprehend, which would go through the entire body of the brass.

713. It would lose its power of resistance?—Oh, certainly, and its strength.

714. That is what you mean by using the term rotting it?—Yes.

715. Can you tell us anything of the effect of gas on picture frames, I do not know whether you noticed that?—I have noticed its effect upon pictures from what I can see on certain pictures in my own place, having been under its action for ten years. I believe in another thirty years those pictures will be entirely destroyed by the gas.

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716. You are are now speaking of your paintings on canvass?—I am; the canvass itself has been rotted; I have tested it lately. The late Sir Charles Eastlake called upon me for the purpose of seeing some paintings, which he knew had been under the action of gas for a period, I believe, with a view to see whether it could safely be used in the Brompton Museum or the National Gallery.

717. Mr. *Woods.*] Pictures in your own possession?—Yes.

718. Did you show them to him?—Yes; he saw that the back parts of the canvass were becoming rotted. Its action upon vegetable is not so rapid as upon animal tissue.

719. Mr. *Sargood.*] One other word; can you tell me of your own knowledge where there is good ventilation in any chamber the tendency of gas is at all to descend below the level of the burner so as to affect goods on a lower level?—Oh dear, yes; I had entertained for many years the idea that the gas we consume for burning being so much lighter than the atmospheric air of necessity would rise and go away, and therefore I had only to ventilate the upper part of my shop or room with a supply of cool air from beneath, and I should experience below the line of the gas no injurious effect; however, I found that to be a fallacy altogether.

720. Your own experience teaches you that property is detrimentally affected even below the level of the burner?—Undoubtedly; and if the Committee would allow me I can give them perhaps some little evidence of that.

721. Will you do so?—About four or five weeks since, opposite to my place in the City, I found an opening in the pavement three feet below the surface; and, upon inquiring what it was, discovered that there was an escape of gas, and at that place, by the application of the burning brand, the earth seemed to burn, to be on fire; and I found then, beyond that, another 10 or 12 feet distant; they were obliged to open again; the fire followed along under th three feet of pavement through the earth, so impregnated was it with the gas that they could burn it; and it was by burning it here and there that they found out at last where the escape took place; and that escape was 30 or 40 feet, I should think, from where they originally made the opening, and where the gas, oozing out of the earth, would burn. I felt that this was very destructive to the pavements, which had been not long relaid, to which I had to contribute as a ratepayer, and I thought that it was a clumsy mode of finding out an escape. I said to the men, "How long has this escape been taking place?" "Oh, probably for a year or two, sir,"—quite as a matter of course—said the foreman of the works. My question to him was, "How do you find out these escapes originally, when they have been escaping so long?" "Oh, we usually find out the position of the escape—its approximate position—from the men going to the sewers, the men who cleanse the sewers, and who are constantly working probably 12 feet under this escape,"—and that to me was a proof at once that gas descends to the sewers, or these men could not be the indicators to the Gas Companies of where their property was being lost.

722. Mr. *Hartley.*] I suppose if it could not go upwards being stopped, and there was a hole downwards, it would go down to the sewer?—I should apprehend it would find its way through the earth, and through the cracks in the pavement.

The *Chairman* said these points were very interesting, but were not relevant to the inquiry.

Mr. *Sargood.*] It did not arise out of my question.

The *Witness.*] If you will allow me, I could, as a gas consumer, appearing before you, asking for your indulgence, whilst I say, I am under the pressure of a great evil, and I have no means of relieving myself; even by ventilation. The ventilation in my place, I believe, is perfect, but the gas follows me down stairs to the cellars.

723. Now just be kind enough to tell me this; your private residence, I am told, is at Champion-hill?—It is so.

724. Do you consume gas there?—I do; not in the sitting-rooms or the bedrooms.

725. That is wise, perhaps; what Company do you deal with?—The South Metropolitan.

726. How

726. How long have you resided in that neighbourhood?—At Camberwell, thirty years; in my present residence, about four years.

727. In the same neighbourhood for some years?—Yes.

728. Do you find the diminution of late years in the illuminating power of gas there as well as in town?—Occasionally; the average perhaps would show that the illuminating power in Camberwell is better than the illuminating power in the City, and considerably better than the illuminating power in Regent-street; but I get it at much less price.

729. If the Committee would allow me, I just want to ask how much do you pay for good gas in the country?

Mr. *Burke* objected to the question on the ground that it was not relevant to the first part of their inquiry.

The *Chairman* said the question had better not be put at present.

730. Mr. *Sargood.*] You say you are a member of the vestry in the parish church of St. James's?—I am.

731-2. Does it happen that your vestry or any local authority has appointed an inspector to test the quality of the gas?—They think it no use.

733. Then I may take it they have not done it?—No, certainly not.

734. You gave that as the reason for not making the appointment?—I do.

Cross-examined by Mr. *Burke.*

735. It would appear that, at all events, you as a vestryman have not complied with the obligation of the Act of Parliament, for it says, you "shall appoint" an inspector?—People are not fond of going into law, knocking their heads against a post.

736. You think if you appoint an inspector, as the Act calls upon you to do, you will knock your heads against a post?—I have endeavoured in the vestry to obtain the appointment of an inspector.

737. You tell the Committee that the gas follows you everywhere; I think you follow the Gas Companies?—I have for the last two or three years.

738. You were a promoter of the Act of 1860?—I was one of the delegates; will you allow me to say further, we considered ourselves sold in the matter.

739. You, as a vestryman, with other vestrymen, brought in that Bill as a public Bill, producing all the evidence you could before the Committee, and the result was the legislation of 1860?—The result was, not having funds, that Bill fell into the hands of the Gas Companies, and was manipulated by them and made a Bill of their own.

740. Then you charge Mr. Sotheron Estcourt, who was the Chairman of that Committee, and all the other Members, with not knowing what they were about?—I do not think that is a fair way of putting it to me.

741. That Act of Parliament is paid out of the local rates, promoted by and at the expense of the vestries?—Yes; and that is the key really to the settlement of the question at that time, that the delegates not having money, and being personally responsible for large expenses, were glad, upon the assurance made by the Gas Companies that a clause should afterwards be introduced into the Act by which the Metropolitan Board should take to those expenses, or some arrangement of that sort——

742. What had the Gas Companies to do with it; is not it a fact that the parties who promoted that Bill propounded a variety of clauses to the Committee, and passed that Bill in the form which Parliament thought was right and fair between the public and the Gas Companies?—As stated by a Member of the House of Commons the other day——

743. What a Member said in the House of Commons has not anything to do with me; I asked you whether in 1860 the Metropolis Gas Act was not the result of the inquiry promoted by yourself and other vestrymen, whether that Act was not passed by Parliament as what was fair for the public and fair for the Gas Companies?—No; as stated by the Member of the House of Commons, it was the result of the Gas Companies having immense funds and the delegates not having any.

744. And you charge the Committees of both Houses of Parliament with ignorance?—I make no charge of that sort.

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745. You will admit that both the Committees in both Houses of Parliament tried to do their duty?—I do.

746. And you brought all the evidence you could to induce them to do it?—And I also said that in private Bills there is a vast deal of jobbery, which you know.

747. Do you charge the Members with being jobbed?—Which Members?

748. What do you mean by jobbery?—I mean to say that the influence of Parliamentary agents and other influences brought to bear in the lobby of the House of Commons is such that private Bills are the result, frequently, of a great deal of manipulation, backstair influence, and jobbery.

749. This was not a private Bill, but a public Bill, brought in as a public Bill, at the instance of the vestries; I suppose you tried a little manipulation on your side?—Yes, we did.

750. Now you clearly proved to the Committee that your boots are rotten; are you prepared to state that you never had such a thing as badly tanned leather?—I daresay I have; most bootmakers have.

751. But you know if your boots are all rotten, as all bootmakers burn gas in London, all the boots in London must be rotten?—No doubt of that at all.

752. What do you want now in the shape of legislation, because you are a great agitator in this matter?—I want to be dealt with upon the same principle which regulates commercial transactions in every other direction; the commercial principle is this, that where Government gives the sanction of monopoly, and it is a monopoly of the worst class, and in that Bill there are clauses which operate as premiums upon extravagance on the part of the Gas Companies; where they do this they should take care to have a power, prompt and binding, by which they can see that the Act of Parliament is carried out equitably to the other side.

753. We have here by your own legislation an application to a magistrate, who has power to inflict penalties in the case of non-compliance with the provisions of the Act; what else do you want; tell us the form of clause?—I tell you what I want; I believe that we could get gas at half as much illuminating power again as we have at present with two grains of impurity instead of 22 or 23, or without impurity at all, so as not to affect our goods; we could get that at 25 or 30 per cent. less than we are getting it now, and pay the Companies 10 per cent.

754. If you won't appoint an inspector, how are you to ascertain what the purity is?—The vestries have made repeated applications to the Companies within their districts for fair dealing, and the Companies scarcely condescend to parly with them upon the subject; "You must have our gas, and you know you cannot get any other, and you must have it at our price;" and whether it be public lamps or on the part of the consumers, the vestry have come to the profound conviction that under present circumstances it is impossible practically to carry into effect those supervising clauses which are brought into work through the inspectors; we know as a fact that in the City, with our appliances and with the Commissioners of Sewers, we have endeavoured to have this matter dealt with equitably before a magistrate, and the Companies have banded themselves together to take technical objections; they will not have the thing brought before the public upon grounds of equity, but they argued the case upon legal technicalities; and, as was said just now, an Act of Parliament that you can drive a horse and carriage through, is no use to the consumers.

755. You have a shop in Lombard-street?—I have.

756. You have two Companies there?—We have three in the City.

757. In Lombard-street?—Probably.

758. There is the competition you are asking for?—No; I can tell you this, I know my neighbours have been charged double what they have consumed, by the admission of the Companies themselves afterwards, but insisting upon cutting off their gas unless they paid that double and unfair and dishonest charge; they have gone to the Company having a main on the other side of the way in the same street, and said, "I wish you would put on your supply," and the answer has been, "We cannot, you must go to the other Company."

759. Why not; there are two Companies there; why, if one will not supply cannot you get the gas from the other?—The Act of Parliament tells you that it gives a district and establishes a monopoly there.

760. Does

760. Does it; does the Act of Parliament say in the City there shall only be one Company, or does it not; do you know the fact?—Yes.

761. Now find any clause in the Act of Parliament saying so?—I know practically it is so, and if the Act of Parliament does not provide for it; it is another instance of the wrong doing of the Companies.

762. There is the Act of Parliament, point out to me the clause in it which says that there shall only be one Company in the City?—I do not know the City.

763. I am talking of Lombard-street; you want to come to commercial principles; you have two Companies in the City supplying you?—Yes.

764. And you are complaining of the supply in the City?—Do I understand I can go to another Company?

765. I ask you why don't you?—I would go to another directly if I could.

766. Why don't you?—Because I cannot.

767. But why?—The Act of Parliament is in my way.

768. Where; find it me in the City of London?—If it is not there, there can be no objection to the City having a Company of their own and coming in; I thought the great argument was that it was all districted by the Act of Parliament; now you say the Act does nothing of the sort.

769. The Act does not prescribe that there shall be only one Company in Lombard-street, and there are two, as you tell me?—I do not know that there are two.

770. I think you are a member of the Common Council; you would like to break up Lombard-street, to have a third set of pipes?—No; it is a great grievance, both to St. James's parish and to the City, in reference to the City, in reference to the breaking up of the pavement. Those who are their natural guardians have not the slightest control over them as against the Gas Companies. We put down a road at an expense of about 8,000 *l.* or 10,000 *l.* in Regent-street—a new road—and immediately after the Companies came in, though they had notice before, and broke it up in several parts. When once the surface of a road is destroyed, half its value is gone.

771. Are you not, as a member of the Common Council in the City of London, promoters of the Bill for breaking up the streets in the City, to lay down a third set of pipes?—We are the promoters, no doubt, of a temporary evil for the purpose of securing a great and ultimate good.

772. What you mean is to put the screw on the Companies?—Not so; I mean to say if the pavements were under the control of the Corporation of London, as they ought to be, for the putting of pipes down, they would put their pipes down with such joints that there would be no leakage; they would have no premium of waste, and they put them down at such times and such periods as would be for the convenience of the citizens and of the commerce, and not for its injury, as the Gas Companies do.

773. Do you, or do you not, advocate the breaking up of Lombard-street, where you live, for laying down a third set of mains?—Certainly; I advocate the breaking up of Lombard-street, and every other street in the City, for a given good purpose.

774. Supposing these joints should by any accident not be perfect, and escapes take place, you would then have three different sets of mains in Lombard-street, from which escapes may be emanating at any time?—No; we only have one set of mains.

The *Chairman* said that point had better be left until the Bill itself came under discussion.

775. Mr. *Burke.*] Is it cannel coal that you consume in Regent-street, or not?—I think it is; I think I pay 6 *s.*

776. From the Chartered Company?—I think so.

777. Do you know the cannel coal gas that you consume in Regent-street lights the House of Commons?—I understand you have gas made on purpose for the House of Commons; that the Members won't stand the gas that ordinary people have to swallow.

778. You say your pictures are destroyed by gas; do you know that at South Kensington they have recently put up no less than 4,000 gas burners, after full inquiry?—I believe they have, and I think they are about taking them down again.

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779. *Chairman.*] Do you know when you pay this higher rate for your gas, whether you really have it manufactured from cannel coal or not?—No, the Gas Companies won't expose the secrets of their place to anyone, therefore if you ask a witness whether he can be sure that the gas is purified by that material or by lime, he cannot tell you.

780. You have no means of knowing?—No.

781. You might, in your vestry of St. James's, have appointed an inspector to your own if you thought fit?—We have Dr. Lankester as our medical man, and it has been discussed at least 10 or 12 times in that vestry, whether he should be appointed.

782. Is he your medical man for the parish only?—For the vestry.

783. He is coroner also?—Yes.

784. Has he time to attend to any additional duties?—He would do so, but he requires an office constructed under certain conditions, and it would be a large expense there is no doubt, and after being done as we are doing it. In the City, Dr. Letheby is practically of no use to the citizens. We go to thousands of expense, but Dr. Letheby cannot get the consumers better gas or cheaper gas. It is found that the perfections of that Bill are not what it was hoped they might be.

785. For that reason you advocate another Bill, which is the Corporation City Gas Bill?—I should say let us have free trade in gas.

786. Mr. *Hartley.*] Would you have 13 sets of pipes in Regent-street?—Oh, no.

787. Then you would not let us have free trade?—Oh yes, we should.

Re-examined by Mr. *Sargood.*

788. With reference to that boot, I want particularly to ask you could that state of leather be possibly produced from indifferent tanning?—Oh dear, no; I have got another sample if you like that I can show you, a piece of cow-hide, that has been subject to the action of gas for a like period, with another piece; the other piece not having been subject to the action of gas; the one is as sound as on the day of manufacture, and the other, though thicker, is as rotten in proportion as the one I have showed you.

789. *Chairman.*] Was it not a fact that some years back experiments were tried in tanning with other materials than those anciently used, viz. oak bark; was not tanning tried with chemical processes?—I should think, judging from the list of patents upon the subject that for the last 70 years tanning has been proposed to be done, and been done by all sorts of processes.

790. Some of them might have produced rotten boots, might they not?—Well, I have known some of the patent processes not at all good for the purposes of wear, but yet tougher than the best tanned leather.

791. Mr. Alderman *Lusk.*] I understand that in the City and Regent-street you have not a sufficient supply of gas for useful general purposes?—I do not pretend to say we are in anything like darkness; we can conduct the business, but I mean to say this, that if we had a better supply we could use a great deal more. We do not get light enough.

792. Have you a sufficient supply which you think is necessary for carrying on your business?—Oh dear, no.

793. You come here with a grievance, and I want to know what it is?—At times we may have sufficient.

794. You have not a sufficient supply for the general purposes of conducting business?—That bears two constructions; I never had my business stopped for the want of gas; I can carry it on.

795. You have a sufficient supply at times, but you have not the supply you would like to have?—Certainly not; not the supply we ought to have.

796. I want to take a plain common sense view of the question; do you really think the bad gas has caused the destruction of your boot?—Undoubtedly; it is notorious: in fact, the Jews who buy up our soiled stock, and things of that sort, and pretty well know what they are doing, call these "Gassy boots;" they come before the public as gassy boots.

797. Do you think it would be possible to make gas without having these destructive properties in it?—I understand that it is sulphuric acid in the gas that destroys these boots, and the Legislature has provided that there shall not be

be more than 20 grains, and there is an excess of that, I understand, that produces the destruction. I heard Dr. Lethby state the other day, that gas can be manufactured without two grains of impurity; that, in fact, you can make it perfectly pure. Recent experiments have shown that sulphur is not necessary to the manufacture of gas.

798. Why did not you appoint an inspector?—They thought it useless.

799. Why do not the vestry employ an inspector?—Here is an illustration in the City. We have an inspector, and he does nothing for us; he makes reports, and when we apply to the justices for a remedy on the part of the public lamps, that we do not have what we bargained for, they employ Mr. Coleridge or some other leading gentleman at the bar, who comes, and upon technical grounds says, "We dispute your right to go into this question."

800. Is it a fact that you do not employ an inspector?—Certainly not, it is useless.

801. What is a poor man to do if he gets a grievance from the gas company?—Why, to be robbed and submit to it, nothing else; he cannot help himself; there is no remedy at all.

802. Suppose millers were to put chalk in their flour, do you think Government would interfere in any way?—They do.

803. Do you think it is necessary when Government make a monopoly that they should themselves appoint an inspector?—Certainly; they have no right to do a wrong for the sake of protecting interest, unless they take sufficient care that the public are not improperly used.

804. As you won't appoint an inspector, a poor person has no remedy at all except coming themselves?—Here is a case in point: I have a great cause of grievance. I burn one hour less than I did in 1850. I take six years, and we burn it for about one-fifth less period; I use fish-tails instead of Argands, which I used to have at that period. I have considerably less light, something like 30 or 40 per cent. less light than I had in 1850, and yet in the six years from 1850 to 1855 I paid 65 *l.* 11 *s.* 9 *d.* in the City place; and during the six years from 1860 to 1865, with about 30 per cent. less gas burning, fewer hours, and with fish-tails instead of Argands, I understand Argands are twice the consumption of fish-tails, making about the same number of burners; my gas costs me more in the five years ending 1865 than it did in the five years ending in 1855.

805. But you are able to take care of yourself?—No, I cannot.

806. I want to ask you a question; do you think that the present Act gives protection enough to the poor people over whom you have charge in your district?—No; I am a poor man; we are all in the same position. I am robbed here of 30 per cent. I proved to you that in 1850 and the five years following my gas cost me less than it does now, and now I am consuming gas one hour less every day of my life. I am paying 35 per cent. more than I did then.

807. Sir *John Ogilvy.*] You have endeavoured to obtain redress under the Act of 1860, and have failed?—My natural guardian is the Board of Sewers. They have placed their officer at work and their solicitor for the purpose of getting me and my neighbours a remedy, and the case was dismissed upon technical grounds that we had no *locus standi.*

808. You have not done it as an individual?—Simply because it was no use.

809. Mr. *Woods.*] Do you think the standard of illuminating power is sufficient as prescribed by the Act?—By no means.

810. Do you approve of there being two standards prescribed by the Act, leaving it to the option of the Gas Company to take whichever they please?—No; I think that is a mistake.

811. Do you, as a vestryman, ask for more stringent clauses in the General Gas Act?—I ask for the abolition of the districting.

812. *Chairman.*] Throwing it open to competition?—That is my plan.

813. Mr. *Staniland.*] You have been asked whether you do not think a Government Inspector would be a sufficient guarantee and protection for the consumer, and you said you thought it would?—Well, I do not think that was the form of the question and I do not think that was precisely my answer; I will tell you what I think, that the less Government interferes in matters of this sort the better; but if the Government do a wrong thing by the sanction of a

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monopoly, then they ought to give something like protection to those who will be injured by the monopoly.

814. Sir *Wm. Gallwey.*] Have you ever applied to the local examiners?—No, it would be quite useless.

815. Have you ever made any application?—Yes, I applied to the justices the other day.

816. You first of all applied to the examiners, and then to the justices, and could get no redress?—We got no redress on technical grounds.

Thursday, 26th April 1866.

MEMBERS PRESENT:

Sir William Gallwey.
Mr. Hartley.
Mr. Kinglake.
Mr. Lusk.
Mr. Morrison.
Sir John Ogilvy.
Mr. Paull.
Mr. Hastings Russell.
Mr. Staniland.
Sir John Trollope.
Mr. Woods.

SIR JOHN TROLLOPE, IN THE CHAIR.

Mr. *Slater* called in; and Examined by Mr. *Webster*:

Mr. *Slater*.

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817. I BELIEVE you have been for some years partner in the firm of Morrison, Dillon, and Co.?—I was partner in the house for many years.

818. What is the name of the firm now?—The Fore-street Warehouse Company (Limited).

819. I believe that is one of the largest establishments in Great Britain or the world?—Yes.

820. What is the character of the business?—We call it a wholesale warehouse, dealing in silk goods and Manchester goods, and various other British manufactures.

821. Every species of textile commodity?—Nearly every species of textile commodity.

822. Now, what is more germain to the particular question, I presume you consume a very large quantity of gas?—We do.

823. To what extent, and from what Companies?—We consumed during the last twelve months ending with the last quarter, 2,494,000 cubic feet of gas.

824. How many meters have you?—We have three large meters; we have two of a 100 lights each, and we have one meter of 200 lights; that is independently of a meter used for the gas cooking apparatus.

825. A smaller meter?—A smaller meter.

826. You say you have two meters of 100 lights each; from what Company are they supplied with gas?—They are supplied by two Companies, the Chartered Gas Company and the Great Central.

827. Do they supply the same meter?—No; they have each separate meters, but they are communicating with the same pipes throughout our warehouses.

828. You are supplied by the Chartered and the Great Central?—Yes.

829. How many meters do the Chartered supply?—We have two meters I think from the Chartered, two of the large meters.

830. And one large meter from the Central?—Yes, and smaller meters distributed throughout the house belonging to each.

831. From the two Companies indifferently?—No.

832. Have you been satisfied with the quality of the gas which has been supplied?—I am sorry to say I have not been satisfied.

833. Will you just tell the Committee, if you please, the nature of your dissatisfaction?—We have found, particularly when the days were dark, that the supply of gas was not only inferior in quality but very insufficient in quantity; that is when we required to use gas throughout the day during some of the dark days; and we very often during the night find a very insufficient supply of gas for the purpose of our warehouses.

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834. Then may I take it that you are short in quantity?—We are short in quantity as well as inferior in quality, and I may mention that the reason why we took gas from two Companies was to afford us the opportunity of filling our pipes sufficiently by both Companies. We have them both acting at the same time, because one of the Companies was scarcely sufficient for our purpose, either from the inferiority of the gas or from the insufficient supply.

835. Although you resorted to two Companies yet you find you are short in quantity and inferior in quality?—We do.

836. You say the quality is inferior; how is that evidenced?—I looked this morning before I came to this Committee at the gas burning in one of our cellars, where we use it during the day, and I found in a fish-tail burner that there was quite as much black as there was white flame coming from the burner; and I was told by our man who has these particular duties to look after that we have been obliged to enlarge the size of our burners of late years in consequence of that insufficient supply of the gas, that we could not get enough for our purposes, we were obliged to enlarge them; therefore we consume a great deal more than we otherwise would be required to do.

837. We were told yesterday by a consumer here that he had to enlarge the burner so as to burn more gas?—That is the case with ourselves.

838. Did you continue the same kind of burner?—We continued the same kind of burner upon an enlarged scale.

839. Even with that you do not find you get what you want?—We do not get what we want, even with that.

840. Do you observe any particular effects on the stock that you attribute to want of purity in the gas?—We are sensible of certain goods being subject to damage by gas; the silk goods, for example, in light colours, if they happen to be raised high up towards the ceiling, are liable to receive much damage; not so much so in the case of other goods, except in woollens. Woollen goods are liable also to receive much damage from the impurity of the gas, or the atmosphere being too heated; but I am not aware that any other of our goods suffer from that cause.

841. Do you attribute that effect on the goods to the impurity of the gas?—Partly to the impurity of the gas, and we judge of that from the darkened ceilings, which are very visible in a very short time after they have been cleaned.

842. Do you find this effect on the goods that you attribute to the impurity is greater in winter than in summer?—I am not aware that we have observed that particularly, because we do not consume much gas in the summer season.

843. I presume that the cost of fittings up and so on would be no object; your object would be to have the best fittings and the best supply you can get?—The cost would not be an object to us; we want the convenience of supply of gas.

844. The cost would not be so much an object as gas of the first quality?—As large consumers, we pay 500*l.* or 600*l.* a year for gas; the question of expense is a consideration; they have done us the favour of reducing the price this last quarter.

845. Of course the quality of the gas is the first thing?—The quality is the great thing with us, the main point of consideration.

Cross-examined by Mr. *Denison*.

846. First of all let me ask you have you made any complaint to either of these Companies on these various matters you have been talking of here?—No; I have not made any complaint.

847. My friend asks you as to the cost of the best burners, and so on; it would hardly be a consideration, I should think, to Morrison & Co., the paying of 10*s.* 6*d.* for an examiner to test the gas?—We have had the gas examined by our gas man very often, but we have had no scientific examination of the gas.

848. Which you could have had for 10*s.* 6*d.*?—That may be true.

849. And the efficient gentleman who would have had to do it would be Dr. Letheby?—Most likely; I have seen Dr. Letheby's reports.

850. You

850. You have not made any application to Dr. Letheby to test your gas?—We have not.

851. Nor any complaint to the Company; your ceiling is blackened; do not you know that from the best gas in the world you may blacken ceilings, if you turn it on too high?—That may be, but much depends upon the inferiority of the material, the quality of the coal; the coarser the coal the darker the smoke.

852. Are you quite sure that is so, because we have a very different view of it here?—It is the general belief in our house, and it is my own opinion that within the last few years the gas has become decidedly inferior.

853. I am talking now of blackening the ceiling, and I want to know whether you have sufficient scientific knowledge on the subject to be able to tell us whether the quality of the gas has anything to do with the blackening of the ceiling?—I have no pretensions to scientific knowledge on the subject.

854. About the quantity; I suppose that is rather a question of pressure?—I suppose it is.

855. On that subject I rather take it from your former answer you made no application to the Company to give you a higher pressure?—I have made no application to the Company at all; we receive it as the public receive it.

856. At what time of the day do you find the defect—I may now call it of pressure—because that is what it really means?—In the middle of the day, when we have occasion to light gas in consequence of the day being very dark, we then find the supply very deficient.

857. It is rather in what we may call the early part of the day than in the evening?—More than in the evening; but in the evening, when the whole of the burners are lit, then we have too small a supply.

858. That is again too small pressure?—Yes, too small a pressure.

859. I am desired to ask you how many lights you have?—Well, I am sorry I cannot answer that question precisely; we must have constantly burning at night somewhere between two and three hundred; I am sorry I have not had them counted before I came to this Committee.

860. Has the number of lights been increased since the meters have been put up?—I don't think they have; these matters are governed much by our convenience and the want of light; they are closely planted.

861. Will you be kind enough to tell me whether you have not increased your number of lights since you have had your meters put up?—I have no doubt we have, because our warehouses have been enlarged.

Re-examined by Mr. *Webster.*

862. I believe you are aware that there is an official person appointed under the Act of Parliament?—I have understood so.

863. Have you had any means of knowing whether the test applied is an adequate protection to the consumers or not?—Individually, I can't say; I have had no means of ascertaining.

864. Mr. *Woods.*] I only want to ask you a question, Mr. Slater. You described to the Committee that you had taken gas from two sets of works, because one was not sufficient?—Quite so.

865. Did you admit them into one set of mains, on your premises?—Yes, we have both in action at the same time.

866. Then the gas you consume comes from both?—In the main, it comes from both.

867. Mr. *Lusk.*] Mr. Slater, of course with your very large premises and business, you are a good judge of gas; is the gas really suited as a rule to carry on your business comfortably?—Well, I can't say it is; if we had any other light we should get rid of the gas altogether, but we must just take that as the best we can get.

868. I am asking you, as a business man, whether light is not the next essential thing to air, and whether you would not like to be supplied with a comfortable light to carry on your business?—We have, during the winter season especially, discontinued our business at an earlier hour in the day; we were induced to do that, in some measure, simply from the inconvenience we felt

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from the gas; there is this inconvenience attending gas with respect to colours, that we cannot distinguish them in the same way that we can in the pure atmosphere, and that, to a certain extent, interferes with our business.

869. Do you think that you have a reasonable and fair complaint against the Company, for producing an inferior gas?—I think there is ground for complaining of Gas Companies.

870. A fair and reasonable complaint?—I do think so most conscientiously.

871. There are some people who make unreasonable complaints, but you are a man who knows better than that?—Certainly, we should not make unreasonable complaints.

872. If you were going to complain, whom would you complain to?—I should write a letter to the secretary of the Gas Company; I don't see that we could do anything else. It is true we could write to Dr. Letheby, who would give us a sincere and proper answer as to the quality of the gas, but he could not afford us a remedy.

873. But, suppose the Gas Company were not to pay any attention to your complaint, what would you do then?—What could we do? We are helpless, and so is the public.

874. Do you think the Legislature in a case like this, where they give an exclusive privilege to a certain class to provide an article so essential and useful as this, should also provide somebody to see that that article is given of a proper quality?—Yes; at the time the last new Gas Company was formed we were induced, for two reasons, to have the meter appropriated to two Companies; first, to increase competition, and next, to have the benefit of a better supply than we could get from one Company; hence we had the same mains connected with the meter from both Companies; we calculated, and succeeded in that calculation, in the first instance, upon getting a reduction in the price of gas; but everybody knows that that was only for a short time, because I believe the two Companies came to an understanding by which the price of the gas was raised, instead of being kept at the lower rate.

875. We are examining into the operation of this Act; do you think that the operations of this Act, if the Company receives an exclusive privilege, that the Legislature should take some means of seeing that the public get what they bargain for?—I think so; I think the public have a right to expect that that exclusive privilege should be carried out advantageously for them.

876. As regards the affairs of the metropolis, I suppose you think that what is everybody's business is nobody's business?—Quite so; I do not think that in such a case the public is sufficiently protected.

877. You think that, practically, the Act is inoperative?—I think so.

878. Mr. *Staniland.*] What remedy would you suggest to help the public?—There ought to be some public officer in my opinion.

879. For what purpose?—To protect the interests of the public.

880. How to protect them?—I think, for example, we have a highly scientific gentleman in Dr. Letheby; if he takes means to ascertain the quality of the gas that is sold to the public, and he finds the quality to be very inferior, and he states so in his report, then there ought to be some check; I apprehend that where there is an exclusive privilege which the Company has received from Parliament, to supply the public with a good article, it ought to be understood that that article should be of the best quality.

881. How do you propose to carry out Dr. Letheby's report?—I am sorry I have not been able to devote my attention to the subject, and, therefore, I am not in a position to answer that question.

882. You spoke of a public officer?—I think some public officer ought to have the control in these matters.

883. Supposing the Government has power to appoint an inspector, and he should report that the gas is inferior, and the Company could be fined for it, would that meet your views?—That would, to a certain extent.

884. Are you aware that under the Act about which we are now inquiring, Government has the power to appoint an inspector, and on his report the Company may be fined?—I was not aware of the fact.

885. What sum, annually, do you pay for gas?—Between 500*l.* and 600*l.*

886. Have you never found it worth your while to inquire whether, under this Act of Parliament, you could have the remedy that you seem to think necessary?

necessary?—It seems to be everybody's opinion that things are so bad that it is hopeless to do anything.

887. Whose fault was that?—I dare say the public are much to blame for that.

888. You are not at all aware that the Gas Act gives the very remedy that you suggest?—I was not at all aware of that.

889. Mr. *Woods*.] Do you mean the Committee to understand that you desire to have gas of an increased illuminating power?—I do.

890. Have you any objection to pay a suitable and proportionate price for it, if there was an increased illuminating power?—We should much rather pay a higher price for a superior article, than the price we pay at present for the inferior article we receive.

891. Then, it is no part of your purpose to come here to squeeze the Gas Companies?—Oh! not at all: we want purity, and gas of the best quality.

892. Now, as to the inspector; supposing the Act were amended in such a way that the inspector, say a permanent inspector, appointed by the Metropolitan Board of Works, then supposing he tested the illuminating power from time to time, and the variations of pressure, and duly recorded them, without any application having to be made by the consumers, would that be an improvement?—It would be an improvement; it would operate to a certain extent as a check. For example, we have officers coming in—every tradesman has officers coming in—on his premises to test his weights and measures: I do not see why a similar person should not come in to look at the quality of gas that is burned.

893. Is it because there is a monopoly granted to a company that you think a public functionary ought to be armed with such a power?—I myself have a strong objection against any monopoly whatever; and whenever a monopoly is created, in which public interests are concerned so fully as in the matter of gas, I think there ought to be a better check than we have at present.

894. Do you know what gas district you are in?—I am not prepared to state.

895. Do you know how many gas districts there are in London?—No, I do not.

896. Do you know whether the districts are confined to one gas company being within the district, or two companies.—I believe that, throughout the whole of the City, there are at least two gas companies.

897. Are you aware whether there is any map of the district?—I have never heard the question of districts mentioned.

898. Mr. *Paull*.] Have you any reason to know, of your own knowledge, or by the analysis of anybody whom you have employed, that the quality of the gas supplied on your premises is not the standard quality directed by the Act of Parliament?—I am sorry to say that I am not able to answer it in the affirmative.

899. Then you judge of its impurity by the damage which is done to your goods?—Not so much from the damage done to the goods, as from the blackness of the ceilings, and the appearance of the flame at the burner.

900. Have you seen gas, in any part of the world, that did not injure ceilings?—They are all liable to injury, less or more; but, I take, for example, the gas in Edinburgh, and some of the west of England towns,—it is of a purer quality altogether; there is not the same amount of injury that we receive from gas in the City.

Mr. *Andrew Bowring* was called in; and Examined by Mr. *Sargood*, as follows:—

901. You are an outfitter in the City of London?—I am.

902. And carry on business in Fenchurch-street?—I do.

903. I believe elsewhere also?—Yes.

904. Have you many establishments?—I have three in the City.

905. With regard to Fenchurch-street in particular, from what company do you at present obtain your gas?—For one of the establishments I obtain my supply from the Great Central.

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906. Which house is that?—It is 158, Fenchurch-street.

907. How long have you had your supply from them?—Ever since I have occupied the premises, some seven or eight years.

908. Did you find that they were supplying your predecessor?—I did.

909. And you continued with them?—I continued with them.

910. Have you had occasion to be dissatisfied with the illuminating power of the gas?—I have been very much dissatisfied.

911. Did you ever desire to make a change from that company to another?—I did some years back.

912. Do you remember in what year that was?—In 1864.

913. What was the other company that you desired to deal with?—I think it is called the Chartered.

914. Was that the company who, under the districting system, were entitled to supply that portion of the City?—It was.

915. The Great Central were supplying by the right which they had to traverse the whole of the City?—Quite so.

916. Now, on what occasion did you go to the office of the Chartered Company for the purpose of inviting them to supply you in the place of the Great Central?—I sent a clerk of mine.

917. What answer did he bring you back from them?—They regretted that they should not be able to do so, as they had made arrangements with the Great Central not to interfere with one another's customers.

918. Can you tell me, before the Great Central supplied this particular house of yours, what company had supplied it?—The Chartered.

919. Were the Chartered Company's pipes at that moment actually existing in your premises if they had chosen to supply you with gas?—They were.

920. Just tell me, what was the immediate provoking cause that led you to desire to change companies?—The Great Central sent a statement of gas supplied and burnt that was at least double the amount of any corresponding quarter. Knowing that we had not burnt that amount, I objected to pay it. I sent on several occasions to the office, but could get no satisfactory redress. They threatened then that unless it was paid in twenty-four hours they would cut off the supply of gas. Upon that, as I wished that the question of quantity should be tried, I preferred being summoned upon the subject. Upon that I sent to the other company, and, of course, not being able to get a supply from them, I was compelled to pay this overcharge or lose my supply of gas altogether, which would have been fatal to me in business, from the nature of my business.

921. Can you tell us how many thousand feet you were charged?—About 20,000. We considered we were overcharged.

922. After enforcing the payment by that threat, did they at any subsequent period admit that there had been an overcharge?—Some twelvemonth after that occurred, when this agitation took place in the City for the purpose of getting redress against the companies, I met a director of the Great Central Company. He was at that time, I suppose for special reasons, particularly polite to me, and said he would inquire into it. Indeed, I went with him to the offices of the Great Central Company, and there were certain books produced; and one of the clerks said, "Oh, we made a mistake on that occasion; we overcharged Mr. Bowring 10,000 feet, but we allowed it in the subsequent bill." We have no proof of that allowance in any shape or way; we have never heard anything about it. They compelled me to pay the overcharge at the time upon the threat that if I did not pay it I should have the gas cut off. As I have already stated, upon my appealing to another company to get a supply, I was denied that supply, and I was compelled to pay that overcharge—an overcharge that was admitted at the end of twelve months.

923. The *Chairman.*] Admitted to the extent of one-half?—Admitted to the extent of one-half.

924. Did they remit you the money?—I have never had the money remitted at all; the clerk said they allowed it in a subsequent account; but in looking over those accounts we do not find a sufficient difference to account for it.

925. It has not been shown you in any paper or record?—No, that was the only notice that was taken of it.

926. You

926. You have meters upon your premises?—I have.

927. More than one?—Only one upon these particular premises.

928. Did you go by the meter in your statement to them?—I merely went from the past consumption, knowing that we consumed as near as possible the same amount as before; we had had no extra burners, and we had closed the premises at the same time.

929. But if your meter was correctly adjusted, would it not have shown you the quantity?—I, personally, know nothing about the fact; in fact I do not understand the meter; but the meter was taken away by the Company, and they brought it back, or rather, brought back a new meter, and stated that the meter was correct.

930. The old one or the new one?—The old one; I have the papers with me now; how they could have made the certificate out with the admission afterwards that it was a mistake, I cannot explain: that is what they sent back with it (*handing a document to the Chairman*); there they professed to show that it was rather an under consumption than over; that the meter did not register all the gas burnt; but they admitted, twelve months afterwards, that it was an overcharge.

931. Mr. *Sargood* (*reading certificate*).] "I certify that I tested the undermentioned meter, and ascertained the same to be correct per Sale of Gas Act." However, they told you afterwards that there was an overcharge?—They did.

932. And you were never aware of the benefit conferred upon you by some subsequent deduction, until you heard it in the office?—I never became aware of it in any other way.

Cross-examined by *Mr. Denison.*

933. Did you apply to the Gas Meter Inspector, or did the Company?—The Company; the Company took it in hand altogether.

934. Are you at all acquainted with the Act called the "Sale of Gas Act," otherwise called Lord Redesdale's Act?—I cannot say that I am thoroughly acquainted with it.

935. Are you aware that this certificate, although it states the meter to be correct, also states that it passed a certain quantity of unregistered gas, which would be in your favour?—I am aware that it states that, but I am also aware that the statement does not at all agree with what the Company said afterwards, that they had made a mistake.

936. Would you be kind enough to tell us, as we have some of the officers here, who was the gentleman who told you the story about being overcharged?—It was one of the clerks in the office.

937. I want to know who?—I cannot tell you the name.

938. Would you know him if you saw him?—I do not know that I should, but we have one of the directors of the Great Central in the Common Council.

939. That is no answer to my question. Should you know him if you were to see him?—No, but I was taken on by this particular director to the office, and if the director is present, I should know him, but I do not see him.

940. Was that particular director the man who told you they had posssibly overcharged you 10,000 feet?—The director was not the man; the director took me to the office.

941. I want to know who is the man?—It is impossible for me to tell you, I do not know his name, I do not know the name of anybody in the office.

942. Are you quite sure you are right about the Company that has the power of serving that district. You were dissatisfied with the Great Central, and then you desired to deal with the Chartered?—I believe the name is the Chartered, the offices are in Dorset-street.

943. We must have some sort of certainty if we are to meet the case?—The offices are in Dorset-street.

944. Mr. Bowring I cannot cross-examine, unless I know what I am to cross-examine you about?—The offices are in Dorset-street, near Blackfriars-bridge.

945. Will you allow me to remind you, you come here making charges against the Companies which I have got to meet, and you cannot tell which Company I am to act for?—The office is at Dorset-street. At the moment I cannot say whether it is the Chartered or not, but it is the Company that

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supplies that district, I believe there is no other Company that supplies that district.

946. You still believe it is the Chartered?—I believe it is the Chartered, their offices are in Dorset-street.

947. Which is the district you are speaking of?—In Fenchurch-street.

948. I have got the City map according to districts, and it does not appear to me that it can possibly be the Chartered.

Mr. *Sargood.*] No, it is the City of London, it is not the Chartered.

The *Witness.*] I was a little doubtful whether it was the City of London.

949. Mr. *Denison.*] Very well, we will take it as the City of London. Then am I to understand that when you said it was the Chartered, you really mean it is the City of London Company?—Yes, I am sorry I made the mistake.

950. How long have the City of London Company supplied you?—They have supplied me not for that place of business; in point of fact they have never supplied me for that particular shop, but for two other places in Fenchurch-street they have supplied me for the last 24 years.

951. Then I must ask you this, when you told the Committee just now that the City had supplied you before, you meant they had supplied you in another place?—They have all along supplied in another place.

952. Do you mean they have supplied you before in another place, or in that place that you spoke of?—My predecessor, in this particular place we are now speaking of. When I took to the business, I found the Great Central were supplying that; my predecessor had changed from the City Company to the Great Central, and I continued with the Great Central.

953. Will you tell me, if you can, whether the City Company had ever supplied you at these premises in Fenchurch-street?—I have no doubt of it.

954. That they had supplied?—I have no doubt they had.

955. Why do say you have no doubt?—Because the pipes are on the premises; I was told by my clerk that the pipes were actually on the premises at the time; there were pipes of some other Company, and I have reason to believe that they were the pipes of the City Company.

956. When did you leave the City Company to go to the Great Central?—I told you I did not leave it at all. In these particular premises my predecessor had been supplied by the City Company up to the time that the Great Central came into operation, and upon the Great Central coming into operation, he changed from the City to the Great Central; when I took the business, I continued with the Great Central, and upon this affair taking place with the Great Central, I wished to go back to the old Company, and they declined.

957. Then, you know, if that is so, the City Company never supplied you?—I do not say they did, not upon those premises.

958. They supplied your predecessor?—I said so from the first.

959. Now, can you tell me up to what time they supplied your predecessor, and when he changed?——

The *Chairman* stated that the Committee could not take hearsay evidence, and it was quite impossible that the Witness could speak to that point.

960. Mr. *Sargood.*] Although that certificate states that the meter passed unmeasured gas, I suppose it was never suggested to you that you had consumed it?—No, there was never any demand made upon me for it.

961. Mr. Alderman *Lusk.*] Mr. Bowring, having three establishments, you are a pretty good judge of gas; are you dissatisfied with the gas in each instance?—Very much, indeed.

962. Both with the Great Central and the City?—Both with the Great Central and the City.

963. In one establishment you are supplied by the Great Central, and in the other by the City?—Yes, two, one by the Great Central, and the other by the City.

964. And you are dissatisfied?—Very much indeed.

965. Now, do you mean to say that when you went to the City Company, they

they would not take your business?—They would not take it for that establishment.

966. What was the reason assigned?—Because they had made an arrangement with the Great Central not to interfere with one another's customers.

967. Then, of course, you had no resource at all?—There was nothing I could do, but pay the account, or be cut off from my supply of gas.

968. I suppose, in your business, you cannot do without gas?—In that particular business as a hat manufacturer we cannot do without it; I was compelled to pay that amount which twelve months afterwards the Company admitted was an overcharge.

969. I suppose the other Company would not take you, and you were obliged to take the Central Gas or give up business altogether?—Quite so; I could not have continued the manufacturing part of the business without.

970. I suppose you never looked at the meters yourself?—I know nothing about the meters, personally.

971. I suppose you leave it in the hands of the Company?—I do.

972. Do you think the requirements of this Act of 1860 are sufficient for the protection of the public?—Certainly not.

973. You know that Act; the Metropolis Gas Act of 1860?—I know something of it. Its practical operation has been that they advanced the price of gas almost immediately upon the passing of the Act.

974. Never mind about that; I was asking about its sufficiency or insufficiency for protecting the public. Seeing the position of the public, and knowing your own position, supposing you felt a little grievance about your light not being good enough, would you take the trouble of going to get an examiner, and go to the expense of a law-suit about it?—I do not think it is likely; I should place myself in the hands of the Company.

975. *Chairman.*] I think the question is, whether you are acquainted with the provisions of that Act of Parliament, and whether you have looked to those provisions to protect you in your business?—I have not looked to see what protection we could obtain; I have some general knowledge of it, I believe.

976. Then you are hardly in a condition to say whether that Act is sufficient for your protection or not?—I am not; from the wording of the Act I cannot speak.

977. Mr. *Paull.*] You are aware that there is a penalty in the Act upon any Company refusing to supply with gas?—No, I was not aware of it, or I should certainly have taken some steps to enforce that penalty.

978. There is a penalty of 40*s.* a-day?—Under those particular circumstances, I should have taken some steps to enforce it.

979. I am not aware whether your gas is common gas or cannel gas?—I believe it is common gas.

Mr. *Sargood* stated that he proposed to call another consumer.

The *Chairman* said the Committee did not think it necessary to call any more of this class of witnesses, unless they could give the Committee some new facts besides those which had been already produced.

Mr. *Sargood* said that after that intimation, he would call the scientific witnesses.

Henry Letheby, Esq., M.D., was called in; and Examined by Mr. *Hoggins*, as follows:

980. DR. LETHEBY, you live in Sussex-place, Regent's Park?—I do.

981. Are you the Medical Officer of Health, and Gas Analyst of the City of London?—Yes.

982. And also Professor of Chemistry in the College of London Hospital?—Yes.

983. And you have held these appointments about 14 years?—I have.

 984. Have

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984. Have you given the subject of gas lighting considerable attention for some time?—I have.

985. Can you state from what period?—Oh, I should think from about the year 1845 or 1846.

986. *Chairman.*] Some years?—For many years; 20 years at least.

987. Mr. *Hoggins.*] You remember, do you not, the coming into operation of the Great Central Consumers Act?—Yes, I do.

988. Were you also appointed by the Court of Common Council to test the illuminating power and chemical quality of the gas supplied by that Company to the City?—Yes, I was appointed by the Corporation directly that Act came into operation, as the gas analyst, under the direction of the Act of Parliament; the referee, as it is called in the Act of Parliament; that was in the year 1852, February 1852, and from that time to the present I have made examinations of gas daily in the City; almost so.

989. *Chairman.*] Daily?—Almost daily; pretty nearly so; very often in the week.

990. Mr. *Hoggins.*] Am I correct in saying that the appointment was made under the provisions of the Great Central Special Act?—That is so.

991. And the passing of the Metropolis Gas Act in 1860?—The appointment was then confirmed, in accordance with the directions of the Metropolis Gas Act of 1860.

992. Were you appointed under the Metropolis Gas Act of 1860 to the office of gas examiner, which you have since held?—That is so.

993. I believe you gave evidence before the Committee of the House of Commons in 1860, previous to the passing of the Metropolis Gas Act of 1860?—Yes, I did, and upon my suggestion many clauses with regard to purity were introduced.

994. Have the goodness to tell me now, if you have also a very large experience of the quality of the gas supplied to the metropolis beyond the City?—Yes; I test the gas a good deal beyond the City.

995. And also the supply to most of the large towns in England?—Yes, to a great many of them; I have tested the gas in many towns.

996. As to the standard of comparison, the measuring the illuminating power of gas, will you have the goodness to tell us, by the terms of the Great Central Act, what was the standard of comparison for measuring the illuminating power of gas; was it wax candles?—It was 12 wax candles, according to the Great Central Act; the power of the light, when burning, from an Argand burner of 15 holes, with a 7-inch chimney, should give the light of 12 wax candles.

997. *Chairman.*] That was ordinary gas?—That was the gas before 1860.

998. Mr. *Hoggins.*] Did you see reason to be satisfied with that criterion, or not?—No, I did not; I found that the wax candle was a very difficult candle indeed to measure light by, it never for two minutes keeping the same standard light, for the wax candle is a candle that requires snuffing; it does not snuff itself like a sperm candle, and there was difficulty in deciding when the candle was burning properly. Having made a thousand experiments upon the relative illuminating power of sperm and wax, I decided that sperm should be taken for the future as the standard. The proportion of the light of sperm to wax is as about 14 to 12, sperm giving one-sixth more light than the wax does. The Metropolis Gas Act introduced sperm on account of the wax being so bad.

999. The *Chairman.*] Was it on your recommendation?—I do not know that; I think it was upon evidence I gave upon it, but I am not sure about that, because sperm had been used in other Acts before that: when burning at the same rate a sperm candle gives the light of 14 in comparison with a wax candle of 12, that is, it gives one-sixth more light than the wax does.

1000. Mr. *Hoggins.*] In order to estimate the care you took, will you have the goodness to state, were a great number of experiments necessary to arrive at that conclusion?—The experiments were made over the whole year at the rate of three a day; more than a thousand experiments were made before I decided what was the relation.

1001. My friend says there is some error in what you stated just now; will you have the goodness to say what was the comparison between the wax and sperm candle?—Sixteen to 14, I think, which is about in the proportion of 14 to 12; it is very nearly the same.

1002. Sixteen

1002. Sixteen wax to 14 sperm?—That is about the same; there is not very much difference.

1003. And that is the basis of subsequent calculations?—That is so; that is the basis of all calculations up to 60.

1004. In the course of the year 1864, were there examinations of the illuminating power of the gas supplied by the three City Companies?—Yes.

1005. Have you a record of each examination?—Yes, I have a record of the illuminating power of the Great Central gas from the year 1853 up till the year 1866 (*producing the same*).

1006. May I ask you this question; has the gas been burnt in a burner within the words of the 25th section of the Metropolis Gas Act of 1860, "at the rate of five cubic feet an hour from an Argand burner of 15 holes from a seven-inch chimney"?—Yes.

1007. Does that burner differ from the burner which was in use at the time of the passing of the Metropolis Gas Act of 1860?—Yes, it does.

1008. Am I right in saying that in the old burners the holes are larger?—The holes of the burner are larger, but the internal diameter of the burner is smaller; I will show you the burners (*producing the same*); that is an old burner which was in use before the passing of the Act of 1860. You will perceive that this will pass freely (*explaining*); the burner that is now used I have here (*showing the same*); that is the gauge of it; the gauge is smaller, and the internal diameter is larger; the holes round here (*pointing*) are larger; those are about 4-100ths of an inch in diameter, and those (*pointing*) are about 6-100ths of an inch in diameter. Still, they are both Argand burners, with 15 holes and seven-inch chimneys.

1009. Is the difference between the two, 0·44 of an inch and 0·57?—Yes, that is it.

1010. Did these alterations in the construction of the burner cause a diminished supply of air to the burning gas?—That is so: the old burner permitted of a rush of air, a large rush of air through the internal aperture, that it destroyed the illuminating principle of the gas: but when that internal aperture was narrowed, the quantity of air supplied to the interior flame was lost, and therefore we had the carbon of the flame standing ignited a longer time, and we had in consequence eleven per cent. more light.

1011. Did that prevent its over oxidyzation?—That is so.

1012. What is the practical result of that, that 12 candles' gas, as measured by the old burner, becomes fourteen by the new?—That is about the proportion.

1013. Are you prepared to say what the illuminating power of the gas supplied by the City Company was at the time when you were first appointed, in 1852?—Yes; during the year 1852, and until the month of February 1853, which is the end of my year, you will find it in page 8 of the Report.

1014. Am I right in saying that the result shows that the average illuminating power of gas supplied by the Great Central Gas Company from 1852 to 1860, the date of the Metropolis Gas Act, was estimated by the burner 14·79 candles?—The average illuminating power of the Great Central Gas, during the eight years before the passing of the Metropolis Gas Act of 1860, as measured by the new burner, or calculated into the new burner, was 14·79 candles.

1015. Mr. *Woods*.] The new burner calculated from the old into the new?——

1016. Mr. *Hoggins*.] That is in 1860; now, if you please, the illuminating power of the Great Central Gas from 1860 to the present time, has it been only 13·63? During the six years from that to the present time, it has been only 13·63 on the average, which is rather more than one candle lower illuminating power.

1017. Is it true, therefore, that there has been a falling off in the illuminating power of the gas to the extent of eight per cent. from the year 1860 up to 1866?—Yes.

1018. The maximum price of gas supplied to the City was 4 *s.*?—Before 1860 it was 4 *s.*

1019. But in 1860 it was raised to 4 *s.* 6 *d.*?—It was, that is twelve per cent. more price, and eight per cent. lower quality.

1020. Is the result of all these operations shortly this, the illuminating pow[er] of

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of the gas was lower by eight per cent., and the price was raised twelve per cent.?—Quite so.

1021. Making the public twenty per cent. worse off?—Making the public twenty per cent. worse off; there was eight per cent. less light and twelve per cent. more price; it makes the difference of twenty per cent. altogether in the condition of things since 1860; I may say that all these returns are up to the year 1860; they are all published; they have not been produced upon the present occasion for this evidence; they were all submitted to the Court; indeed the Great Central Company did not think I did justice to their gas before 1860, and thought it was actually better than I have put it down here.

1022. Would you have the goodness to state what is the time or hour when you have made your tests?—The tests were generally made from between dusk and seven and eight o'clock, or eight and nine o'clock in the evening, or from that to eleven o'clock, but since then they are generally made from dusk till about twelve o'clock or one o'clock in the morning.

1023. Was the former mode of making the test, in your judgment, proper at that time?—Yes; they were made with the same sorts of instruments, and no difference, except in the burner and in the substitution of sperm for wax; in fact, most of the tests were made with the same instruments right through the whole investigation.

1024. *Chairman.*] What is the amount of sulphur allowed by the Act of Parliament?—Twenty grains.

1025. And they have all exceeded it by the average?—They have.

1026. Mr. *Hoggins.*] Has the chemical quality of the gas become worse instead of better since the passing of the Act of 1860?—In one respect it has, in another respect it is better.

1027. Will you state what it is?—It is worse with respect to sulphur.

1028. *Chairman.*] Are you speaking of all three Companies?—I am speaking of two. I cannot speak positively of the City Company, because I am not sure what was the proportion of sulphur in the City Company. I find before 1859, the average proportion of sulphur in the Great Central Gas was 16·4 grains for every 100 cubic feet. The proportion of sulphur in the Great Central Gas since the year 1860, I have tabulated it here, and it has reached 35 grains in 100 feet, and out of 779 experiments it has exceeded 20 grains, 612 times. In other words, there have been 61 per cent. of violation of the law; I will put that table in (*handing it in*).

1029. You wish it to be put on the notes?—I do, because that gives the proportion from the year 1860.

1030. Mr. *Hoggins.*] You said you were examined about the Metropolis Gas Act of 1860?—Yes.

1031. At that time, were twenty grains fixed as the maximum amount of sulphur in the gas for the metropolis?—It was, upon my suggestion; I thought of giving it a large margin, 16·4 grains was in the Great Central Gas before that time, and knowing how much mischief is done by the sulphur in coal gas, I thought the proportion of 20 grains would be a large average proportion or maximum proportion; that proportion was adopted.

1032. Is that which you have so fixed upon founded upon two sets of facts; one that sulphur of gas is a pernicious thing?—Yes.

1033. Because it forms sulphuric acid, or oil of vitriol, which destroys fabrics?—That is so; it quickly becomes sulphuric, it first forms sulphurous acid, and this by taking more oxygen from the air becomes sulphuric acid, or the acid sulphate of ammonia, which is very corrosive, and rapidly destroys fabrics; we have seen so much of that, that there can be no question about it, whatever theory may be formed of the nature of the compound, that it is a destructive agent.

1034. *Chairman.*] Destructive of what?—Of all kinds of textile fabrics, especially to paper, linen, leather, and also to brass work; I know that unlacquered brass work will not stand as it did formerly; it cannot be exposed for any time to air without undergoing corrosion.

1035. And human health?—I do not think it affects human health much.

1036. Mr. *Hoggins.*] Before 1860, did experiments show that sulphur was present in less than 20 grains?—Yes.

1037. Since then, have you any circumstances to state which show how much sulphur

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sulphur is present?—In the coal gas of London, the Central Company particularly, it is not so with the City Company so much, but the Central Company has almost constantly supplied gas with a larger proportion of sulphur than is sanctioned by the Act of Parliament.

1038. May I ask you, in your judgment and experience founded upon experiments, have the companies fulfilled their obligations as required by the Act?—Not in that particular, except the City. The City has for a considerable time, as you will see by that paper, supplied gas with less than twenty grains of sulphur; that was so for more than a period of twelve months. When there was care taken in the selection of the coal, we did not find the City supplying a bad gas; but the Great Central has been almost constantly supplying a gas over the proportion sanctioned by Parliament, and the Chartered not altogether constantly, but very frequently.

1039. You have examined the supply of gas to many towns in England?—Yes, I have.

1040. I must ask you one or two general questions upon that. Have you found in the towns of England, in your examination, what is the extent of impurity of the gas there?—It is less than twenty grains. I have not got it tabulated here, but I have here the record of the examination of gas in the towns of England made by myself, and with my own apparatus, such as I had used in the City since the year 1865, and there are very few instances where the proportion amounts to twenty grains. I have a list of the towns; I might give you a copy of it.

1041. You say that in towns in the country it is less than twenty grains?—Yes.

1042. Does it result in this, that the worst gas is found in London?—Yes; in that respect as a rule.

1043. Please to tell me if you entertain the opinion that gas with less impurity than twenty grains ought and can be supplied in London?—I have no doubt of it; the mere passing of the London gas, as it is supplied to the public, through a small quantity of lime, will remove as much as seven grains in 100 feet. The purification, at the present time, is not by lime in the City of London, but by oxide of iron, the hydrate oxide of iron.

1044. Please to tell me what are the towns that you alluded to?—Ely, Chatham, Oxford, Newcastle-on-Tyne, Birmingham, Nottingham, Derby, Burton-on-Trent, Hanley, Winchester, Dublin, Littleborough, Manchester, Hastings, Exeter, Bath, Liverpool, Pewsey, Chester, Uxbridge, Brighton and Hove, Rochester, Chatham and Strood. I have also examined the gas of Edinburgh, but it is so peculiar, that I have not thought it right to make a comparison of it.

1045. You have said that, in your judgment, gas of much less impurity than twenty grains ought to be supplied in London?—Yes.

1046. Have you any doubt about it?—Not at all.

1047. Can you tell me if you can suggest whether there should be a legislative provision more precise than at present as to the places of testing the gas and the mode of doing it?—Yes, I do. The experience I have had as official analyst for the City has led me to conclude that we cannot go on in the present way in our testing of gas. Disputes arise about places, disputes arise about the method of testing, about the time of testing, about those who have jurisdiction in the City when the case comes before them; in point of fact, the whole thing is in such confusion, that we can do nothing at the present time.

1048. As to the places, would you say that the place where the test should be should not be less than 1,000 yards from the works?—It should not be. There was a misunderstanding of my evidence at the time of the Gas Bill in 1860; it was put down "at as near as possible a thousand yards," instead of being put down, as I intended by my evidence, at "not less than 1,000 yards." In Paris the testing places, and there are ten of them, are from two to three miles from the works, and there are many places in England where the gas travels many miles before it comes to the testing place. I do not see why in the City we should have that difficulty of being compelled to test it at places 1,000 yards from the works. It should be not less than 1,000 yards, and that place should be agreed upon by the gas companies and the local authorities.

1049. Should it be open to the visiting officer at all times?—It should be, I think. The test should take place, as it takes place in Paris, at certain times.

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The Paris time is from eight till eleven in the evening in winter, and from nine till eleven in summer.

1050. Sir *John Ogilvy.*] Without any notice?—The testers are there the whole time. The Gas Companies have the privilege of sending somebody to witness the tests, but he must not interfere. The expenses of the testing places are defrayed by the Gas Company, but the appointment of the officer and his salary is with the municipal authorities. That is found to work very well in Paris.

1051. Mr. *Hoggins.*] As to the meter and burner?—As to the meter and burner, I see no reason why the Gas Companies should not find, if they like, the meter and burner. The meter of course would be stamped by the official tester, and the Gas Companies are surely entitled to that burner which will give them the best light.

1052. *Chairman.*] It appears that proceedings have been taken against two of these Companies?—Yes, but it has utterly failed.

1053. Sir *John Ogilvy.*]. What you state now is, that steps have been taken to enforce the provisions of the Act of 1860, but they have failed?—That is so, and the delay in the taking of those proceedings rests probably more with me than with the Corporation, because I have been most anxious to get the Companies to ascertain the cause of the excess of the impurity and sulphur, that they might take such measures as they might find necessary for the improvement of the gas. Indeed, they receive my reports regularly, and upon my suggestion it was referred to an eminent engineer, Mr. Barlow, for the purpose of deciding; and since that, the Corporation have referred it to Mr. Hawksley; and it is in consequence of that there has been the delay in the proceedings. But these proceedings which have been taken during the last 12 months have failed by reason of this, that there is no jurisdiction in the City.

1054. Mr. *Hoggins.*] Is the burner in present use such as common people could use?—The burner is one that the public could use if they liked; but if the public choose to measure their material with an instrument with a hole in the bottom of it it is not the fault of the Gas Companies, the burner is capable of being used by everybody.

1055. Mr. *Denison.*] Is it Sugg's burner?—Sugg's burner; there is nothing special in it; it is one that might be used in shops, if you please?

1056. Mr. *Hoggins.*] Have you found what is the comparative illuminating power of the Chartered and Great Central gas before the passing of the Gas Act of 1860, and since?—Yes, I have; I do not know whether I have the paper with me; I have it all in detail in a book, but I have not the general results here; I have the whole of the details of the investigation here, but I have not brought them into a general shape.

1057. Mr. *Denison.*] Which Company is this?—They are now coming to the Chartered, I understand.

1058. Mr. *Hoggins.*] Just read the first few lines; do you approve of that as being what your evidence means to say?—Yes. (*Reading.*) "It would be seen that during the time of active competition, namely, from 1852 to 1857, the average illuminating power of the Chartered Gas was 12·49 sperm candles of standard quality, and that the Great Central was 13·41, that is as measured by the old burner; whereas in the three years which have elapsed since the passing of the new Act, and during which time, the price of gas without meter rent has been 4 *s.* 6 *d.* per thousand."

1059. The average illuminating power of the Chartered gas has been 12·64 old measure, and the Great Central 12·91?—Yes; the Chartered 12·64 and the Great Central 12·91; the Chartered have therefore improved a little, giving a little better gas; the Great Central have given worse.

1060. In other words, is this the statement: while the price of gas within the last three years has been raised 12½ per cent. above the price of the former period, the illuminating power of it has been, in the case of the Chartered gas, raised only 1 per cent.?—That is about it.

1061. And that of the Great Central has actually fallen to the extent of 4 per cent.?—Yes; that is, in those three years.

1062. Prior to the Gas Act of 1860, what was the provision for the purity of the gas supplied to the City?—There was no special provision beyond this, that it should be as pure, or purer, than the gas in the Great Central, and, before the passing of the Great Central Act, there was no provision about ammonia or sulphur

sulphur at all. This is it: "That all the gas supplied by the Company shall be of such quality as to produce from an argand burner, having 15 holes, and a seven-inch chimney, and consuming five cubic feet of gas per hour, a light equal in intensity to the light produced by twelve wax candles of six in the pound, burning one hundred and twenty grains per hour, and such gas shall be superior in purity to the gas in common use, supplied at or about the seventh day of December, One thousand eight hundred and forty-nine, by any of the Companies who then lighted the City of London, or any part thereof, with gas." There is nothing specific, therefore; it rested entirely upon the comparison of the quality of the gas at that particular time.

1063. Is it true that the gas of the Great Central and the Chartered Companies, formerly, and for a considerable length of time, contained scarcely any traces of sulphuretted hydrogen?—That is so; they did not contain sulphuretted hydrogen by the Gas Act of 1860.

1064. And the quantity of sulphur in any shape did not average more than 20 grains in 100 feet?—In the Chartered it did; it was 21 grains in the Chartered, and in the Great Central it was 16·4.

1065. The average proportions actually found in the gas of the three Companies supplied to the City of London, from 1853 to 1859 was:

Amount of sulphur per 100 cubic feet of gas:

Great Central Company - - -	16·4	grains.
Chartered Company - - - -	21·5	„
Commercial Company - - - -	17·1	„
Average - -	18·3	

—Yes.

1066. You may be asked about it, therefore I will put it to you; did you state to the Committee of the House of Commons that the maximum amount of sulphur, in your opinion, should not be more than 20 grains?—Yes.

1067. What was that deduced from?—It was deduced from the experiment I had made, not only in the City but elsewhere, but finding that the average was less than 20 grains, I considered that they should be looked upon as the maximum or fixed as the maximum quantity of that impurity.

1068. *Chairman.*] The Committee wish to know, with the increased scientific knowledge of purifying gas that you now possess, whether it would not be possible to have even a smaller maximum than 20 grains per 1,000 cubic feet?—Conditionally, but not absolutely; if lime can be used, there is no doubt that proportion should be 16 grains as a maximum; but if it be in a locality where the lime is offensive, and they are obliged to use oxide of iron, then they must remain at 20 grains.

1069. In what way is the lime offensive?—The lime, under the name of "Blue Billy," is a very difficult thing to remove from gas works without offending the neighbourhood.

1070. They have a difficulty in getting rid of it altogether?—That is it.

1071. Mr. *Hartley.*] It is not as a matter of economy that they get rid of it?—On the contrary, it costs them more; a ton of lime will purify 20 tons of common coal.

1072. Mr. *Woods.*] Do you mean to say that Gas Companies cannot use lime because it would be a nuisance in the neighbourhood where they manufacture goods?—They can use it after the oxide of iron; but that requires extensive plant, a larger surface for their works; from experiments that have been made by Mr. Hawksley and myself at Nottingham, I find that the gas must stand in contact with the lime half-a-minute, in order that its sulphur compound should be removed from it; that will cost money; and if the public are to have 16 sulphur gas, they must pay for that extra cost of purification.

1073. Mr. *Paull.*] Do I understand you to say that the maximum should not be less than 20 grains?—The maximum, under what circumstances?

1074. The maximum of 20 grains of sulphur, I understood you to say, if lime were used, it might be 16; but if oxide of iron is used, it must be 20 grains?—Twenty grains is the maximum.

1075. If that be so, how do you reconcile it with your statement a few minutes ago, that the Companies could supply to consumers gas with very much

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less than 20 grains?—If they use lime, either lime alone without oxide of iron, or they must use the lime after the oxide of iron.

1076. Mr. *Hoggins.*] You said that the proportion of sulphur in gas supplied to the City before 1859 did not, except in the case of the Chartered Gas, exceed 20 grains for 100 cubic feet?—Yes.

1077. Since that, has it rarely happened that the amount has not been largely in excess of it?—Yes, that is so.

1078. Have you made, for instance, 380 examinations of the gas of each of the Companies during the last 16 months?—Yes, I think so.

1079. Tell me if, during the last 16 months, it is true that there have been 271 occasions when the gas of the Great Central Company contained an excess of sulphur?—I think that is so; I have not my notes of that.

1080. And 223 that the Chartered contained an excess; and 186 that it was so with the City Gas Company?—That is so.

1081. Therefore, altogether, the violations of the law in this particular have in the case of the Great Central amounted to 71 per cent. of all the testings?—Yes.

1082. Of the Chartered 58 per cent.?—Yes.

1083. And of the City Company 48 per cent.?—Yes, that is so.

1084. If lime be used, gas can be made, reducing the sulphur to six or eight grains?—Yes, we found at Nottingham that it can be reduced to that.

1085. Is it only a question of placing the works and making the arrangements that are necessary?—Yes; if the works are carried out of town it could be done.

1086. I want to ask you, have examinations taken place with respect to the illuminating power in standard sperm candles?—Yes; the illuminating power is always tested in sperm candles.

1087. Have examinations been made by you up to February 1860 of gas, with the new burner, for the Companies?—No; the old burner up to 1860.

1088. Have you anything to state in respect of these examinations which have taken place?—Prior to 1860, I have nothing to say to it beyond this, that these examinations were made with the old burner; in all other respects the examinations were the same.

1089. Have any examinations been made with the new burner?—Not before 1860.

1090. Is it correct, then, that the illuminating power of the gas supplied by the City Company has ranged from 11·7 standard sperm candles to 16·98?—In what interval are you speaking of?

1091. I do not know?—No doubt it has; I should think it very likely. I have not a note of that, but I have no doubt that is about it.

1092. Have you made examinations, which ended in February 1866, with the new burner?—Yes.

1093. Have you got them written down?—I have all the details here, at least the weekly results.

1094. Did you make 2,612 examinations, which ended in February 1866, with the new burner?—Very likely; I have not my notes here.

1095. You will find it at page 7 of your report?—I see it now. During that time 870 examinations have been made of the City Company's gas, 870 of the Chartered, and 872 of the Great Central, making a total of 2,612 experiments, and every experiment the average of ten observations.

1096. Now, I will ask you the result?—The maximum power of the City Company in that time has been a maximum of 16·98 candles, and a minimum of 11·07 candles, an average of 13·67; of the Chartered Company the maximum was 15·82 candles, the minimum 10·80, and the average 13·82; of the Great Central Company the maximum was 16·50, the minimum 11·60, and the average 13·83.

1097. Are all these averages a little above the numbers for the last two years?—I think they are.

1098. They are all inferior, and do not reach to the proportion of the preceding ten years?—No, they do not, excepting the year 1863, and then that corresponded with the year 1858.

1099. Have you got a table which shows the quality of the Central gas from 1852?—Yes.

1100. That

1100. That is, when you were first appointed the gas analyst in the City?—That is so.

1101. The illuminating power in standard sperm candles; will you refer to it?—I have already referred to this table.

1102. The average of eight years before the Metropolitan Gas Act, was 14·79?—That is so.

1103. And the average of the six years since the Metropolis Gas Act, was 13·63?—That is so.

1104. Now, may I ask you this, "It is thus seen that the amount of sulphur in the gas of the City Company has ranged from 14·2 per 100 cubic feet to 28·2, the average being 19·6 grains"?—Yes, in the City of London Company.

1105. In the Chartered Gas Company?—In the Chartered Gas during the last year, out of 224 examinations made for the sulphur, the maximum was 30·7 grains per 100 cubic feet, and the minimum was 13 grains, and the average 21·2 grains; there was 126 occasions out of 224 when the proportion was more than 20 grains.

1106. And the Great Central?—With regard to the Great Central, the range of sulphur was from 32·9 grains in 100 cubic feet to 14·4; the average was 24·1; and on 212 occasions, out of 220, the proportions were over 20 grains.

1107. Are there two causes which in your opinion are chiefly concerned in the excess of sulphur in the gas supplied to the City?—Yes.

1108. First, is the presence of pyrites in undue quantity in the coal?—I think that the London coal is not sufficiently picked from sulphur impurities.

1109. The undue quantity of sulphur impurities in the coal, and the imperfect purification of the gas?—I must make an exception in that respect with the City; the City Company did for a considerable time take pains, and during that time the gas was rarely more than 20 grains; another cause is the use of hydrate oxide of iron, instead of the hydrate of lime.

1110. Have you paid attention to the quantity of sulphur which you have removed yourself?—Yes.

1111. So that you can speak positively from your own observation?—I speak from four sets of observations; firstly, in London, before the hydrate oxide of iron was used, there were not twenty grains of sulphur. Secondly, in the towns of England where the hydrate oxide is not used, but lime, we have not twenty grains. Thirdly, where lime is used experimentally at Nottingham, the proportion of sulphur is reduced to six grains. Fourthly, I take from the gas supplied to the City, and I can take out some grains of sulphur by passing it through a small quantity of lime, the ammonia of gas is taken out, decomposed by the lime, and to a large extent absorbed.

1112. In the towns of England, have you found what was the proportion of sulphur?—Yes, I think from the recollection of experiments which I have made, the proportion of sulphur in the towns of England does not average more than fourteen grains; I think so; I can add them up and calculate the average.

1113. Giving us the whole of the facts which you have before you, I want to ask you whether you have formed any opinion as to what is the main cause which has operated in lowering the chemical quality and the illuminating power of gas in the metropolis?—The use of oxide of iron; it has injured the gas in every way.

1114. Mr. *Hartley*.] Has it injured its illuminating power?—It has injured it; carbonic acid is one of the impure qualities of gas; hydrate oxide of iron does not remove carbonic acid from the gas; lime does; the presence of carbonic acid in gas to the extent of about two per cent. will lower the illuminating power nearly a candle.

1115. Carbonic acid is not combustible?—It is not, it takes away from the carbon of the gas.

1116. Mr. *Paull*.] Is this hydrate of lime a substance which you say it would be impossible to use in London?—I do not say so; I say the hydrate of lime can hardly be used alone in London without the oxide of iron; if you come to supplement the use of oxide of iron by the use of lime it will be costly.

1117. You said some little time since that it would be impossible to use lime, because it would be so offensive to the neighbours?—Lime alone; if you use both purifying agents, then it becomes costly.

1118. Mr. *Hoggins*.] I want you to tell me this, do you find that the former

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substance which you mentioned fails to remove the more complexed sulphur compounds from gas; it fails to absorb carbonic acid?—That is so.

Cross-examined by Mr. *Denison*.

1119. Just to finish this oxide question, I understood you to say that one difficulty in using lime after the oxide of iron is, that it would require a considerable space?—It would want more space; I could not speak as an engineer as to the amount of space, there is no doubt about it, that it will take a larger space.

1120. Do not you know that it is extremely difficult for Gas Companies to get Parliamentary Committees to grant them any increase of space in or near the metropolis?—In the metropolis.

1121. We may use the word "near" the metropolis?—To some extent, there are those difficulties.

1122. You know about Fulham?—I do.

1123. You know we have made two attempts in the Imperial Company to get more land at Fulham, and have failed twice over?—Yes.

1124. You very fairly say if that is done, the public must in some way pay for it?—No doubt.

1125. With reference to this table you have referred to twice, at page eight in your report, I want to ask a question; the Gas Act came into operation in February 1862, although it was passed in 1860?—Yes.

1126. That being so, would not the proper division have been to take the average from 1853 to 1862, and not from 1853 up to 1860?—It would not have made much difference.

1127. I have taken the trouble of calculating it, and I find it does make a difference, because it brings in 13·12 into the upper period, and takes it out of the lower period?—But it is over eight numbers.

1128. If you take it from me, I will tell you what it works out to, adding up the nine years, including 1861, it comes to 14·6, and, in other cases, it comes for the five last years to 13·73, it is something taken off the one?—It makes, in round numbers, a candle difference.

1129. It is not far off, as you have given it, it is more than a candle?—As I have given it, it is less than a candle, we may as well have it correct, it makes a difference of about three-tenths.

1130. Another question about this table; this is made up, I suppose, from tabulations; the shorter periods, these years, are inserted?—Every year ends in February right through the whole.

1131. But you give quarterly returns?—The quarterly returns are on that table which I have given; that is not for the illuminating power, that is for the sulphur.

1132. I have got one of the quarterly returns under my eye; I have got your quarterly return from 1859 to the end of 1861; do you happen to have this with you?—No, I do not think I have; I will see.

1133. If you will look at my paper, you will see if I am right?—I think I can give the quarterly returns for that time.

1134. Just see if these figures agree with your book?—I have all the quarterly returns from 1852 here.

1135. We will be content with two or three years. Let us take 1859, 1860, and 1861?—Which quarter will you take?

1136. I will begin with your return for May 1859; 11·95 sperm candles?—Yes; in that particular report I was taking the average of two sets of experiments; the experiments that were made at the London Hospital and the experiments that were made in the City. In the return which I put into the book, I made returns of the City alone, because it is in the City alone that we are now making the experiments, and I shut off from that quarterly return the illuminating power of the Great Central at the London Hospital.

1137. I understand the Committee are inquiring into the operation of the Act all over London?—So they are; but you do not understand the explanation I am giving; we now make experiments upon the gas in the City, and it is only fair, if I am making a comparison of the illuminating power of the gas now, compared with what it was formerly, to make the experiment upon the gas in the City alone.

1138. If

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1138. If you will not think so much of what my object is, we shall get on much better; we are here to inquire into the operation of the Act; is that figure 11·95 right for May 1859?—It is right for the average of the two places.

1139. For August it is 11·50?—That is again for the two places.

1140. I take it from you that you have the two places all the way through?—Yes.

1141. November, is it 12·89?—Yes.

1142. February 1860, is it 13·55?—Yes.

1143. May, 13·21?—Yes.

1144. August, 12·05?—Yes.

1145. November, 11·34?—Yes.

1146. February 1861, is it 11·84?—Yes.

1147. May, 11·37?—Yes.

1148. August, 11·10?—Yes.

1149. November, 12·33?—Yes.

1150. We will take the average of these, and it is a little over 12?—Perhaps it is; these are all in quarters; they are not added up as you are adding them; I can do that.

1151. Then February, 1862. I only want to get the materials from you; is it 13·58?—No, it is not 13·58 in February, 1862. It is 13·58 in the hospital, and 13·13 in the City; therefore the average of that will be 13·35.

1152. In May, 12·74?—Yes, that is about it.

1153. August, 12·61?—That is it.

1154. November, 13·34?—Yes.

1155. February, 1863, is it 13·01?—I think so.

1156. May, 13·26?—Yes, I think so; it is about the average, but I cannot immediately calculate them.

1157. August, 14·15?—Yes.

1158. November, 13·46?—Yes.

1159. February, 1864; 13·80?—Yes.

1160. May, 13·56?—It is 13·65.

1161. August, 13·50?—Are you alluding to the Great Central or to the Chartered?

1162. This is all Great Central?—August, 1864; that is 13·52.

1163. November, 13·33?—Yes.

1164. February, 1865; 13·22?—Yes.

1165. May, 14·26?—No, 14·19.

1166. August, 14·01?—14·23.

1167. November, 13·61?—13·62.

1168. February, 1866; 13·42?—13·28.

1169. Of course, I cannot expect you to add those figures up just now, but they come to about 13·6. Is it the custom to use candles cased or uncased for testing?—Uncased.

1170. Has that always been so?—No; up to about two years ago they were used in a case.

1171. Which gives the most light?—They gave exactly the same light in the case I used before that time; I have made some hundred experiments since to determine that point; there is the uncased candle (*producing the same*); an error crept in on the examination of the Birmingham case in consequence of Mr. Sugg, who made the cases, making the top of the case so small that it would not permit the candle to burn 120 grains an hour; but this is the old case which I use, and that gives no difference; Mr. Sugg, as well as myself, has made experiments upon the point, and we find no difference; that error came upon us so suddenly that I could not account for it, but I thought at last that it was owing to the aperture being so small that it would not permit the flow of a sufficient quantity of sperm for the wick; but in a proper case, such as you see here, there is no difference.

1172. If that were so I suppose the candle would not burn at the same rate?—Exactly the same.

1173. I mean if there was a long nozzle, as we may call it?—The Act of Parliament has fixed the burning of the candle at 120 grains an hour, and it is the duty of the experimenter to get the candle burned as nearly to that as possible. If the candle burned less than the 120 grains an hour, the proportion

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of sperm is much greater than the light evolved. If, on the other hand, the candle burned more than 120 grains an hour, the proportion of light evolved is much greater than the proportion of sperm made use of. Therefore it is that in these experiments it is necessary that the candle should be made to burn cased or uncased as near to 120 grains an hour as possible; and that is so particularly provided for in the Paris Act, that a lamp burning more than a certain quantity of oil per hour, or less, the experiment is not permitted to be recorded.

1174. What has led you to change your habit from burning them in cases?—Simply because that question arose at the time of the Birmingham Gas Act, when Professor Hoffmann made some experiments, and found that the candle with the Birmingham case when burnt open, thus, gave for the sperm consumed more light relatively than the candle burning in the Birmingham case; and therefore it was that in the Birmingham Act of Parliament it was proposed that the candle should be used encased, to avoid any objection upon the subject. As it makes no difference, I use them encased.

1175. I remember the Birmingham instance, I may say, very well; and that did end, as you say, in a provision being inserted in the Act that the candle should be uncased?—Yes.

1176. In consequence of its being proved to the Committee that there was a difference between the light given cased and uncased?—You must particularise the case. It was not generally proved; it was especially proved with regard to the Birmingham case.

1177. Taking the sperm candles, let me call your attention to another paragraph in your report on page 7; can you tell us, out of the 870 cases relating to the City Company, how many times the light was below the standard?—I can answer that, but not immediately, because the laboratory books are not here.

1178. When you speak of the books, your tables are all made up from the books?—Yes.

1179. If the books are to be here, I suppose you would have no objection to letting us look at them?—Not at all.

1180. I thought we had somewhere in your report that very result?—Very likely it may be: it may be here; I forget the report from time to time.

1181. I think you will find the pages are different; I have the report printed lying here, in which I find this: "I have further to report that of the 870 examinations of the gas of each of the Companies during the year the gas of the City Company has, on 31 occasions, been below the standard of the Act; that of the Chartered Company on 14 occasions, and the Great Central on 4"?—That is so.

1182. Now, you said a word about price; but I think I understood you, sir, to say yesterday, you were not going into the question of prices just now?—

Chairman.] No, not at present; I take it, Dr. Letheby is not called upon that point, but he said there was an increase under the Act of 1860.

1183. Mr. *Denison.*] The price has again been reduced to 4 *s.*, has it not?—I believe so.

1184. By one Company, and for anything I know, by more; the candles have been raised to 14?—Yes.

1185. That being so, the candles being required to be 12 in the Act of 1860, and the price of 4*s.* 6*d.* in the Act of 1860, if the price has been reduced to 4 *s.* and the candles raised to 14, what proportionate increase of light is that, for a given sum of money?—As over the Act of Parliament number of 1860, or are you alluding to the actual amount of light given to the City?

1186. I am asking you about the Act of Parliament?—Let me understand you, for I do not. In making the comparison do you wish me to make the comparison with what may be termed the Act of Parliament 12, or with what was practically the quantity of light supplied to the public?

1187. I mean the Act of Parliament quantity of 12 candles that was required in 1860; you know, do you not, that the Companies have now volunteered in their Acts of this year to give 14 candles?—Yes.

1188. That is the proportion of six to seven?—Yes.

1189. And 4 *s.* 6 *d.* to 4 *s.* is in the proportion of nine to eight?—Yes; that is 11 per cent. increase of light, and it is nine per cent. lower price.

1190. If we turn them both into money, I think, if I am not mistaken, it comes

comes to this, that for the quantity of light for which people were to pay 4 *s.* 6 *d.* under the Act of 1860 they now pay only 3 *s.* 6*d.*—Well, I would rather put it in another way.

1191. Will you answer that question?—I cannot answer that question. It seems before the Act of 1860 the public were 20 per cent. worse off than they were since, and now you are going to put them in the position they were in before.

1192. I am comparing the Acts of the present year with the Act of 1860, which is a very simple calculation?—They were 20 per cent. better off before that Act, and now they are going to make them 20 per cent. better off than they are now, and that makes it equal.

1193. Will you be kind enough to answer my question: have you made the calculation?—I have made the calculation thus: The light is 11 per cent. better than the Act proposes, the price is nine per cent. less than the Act proposes, and that is one-fifth better, I make it.

1194. That is what I make it. Do you know that the Companies who are getting Bills through Parliament this year have already volunteered to put into their Bills the raising of their light to 14 candles?—I believe that is so generally, if not so altogether.

1195. Those City companies are not the only ones whose gas you test?—No; I test a great deal about the metropolis.

1196. Can you mention any others that you test?—Yes; I test the Phœnix; I have tested the Commercial; I have tested the Imperial pretty regularly.

1197. I will take those three. I happened to hear something of the Imperial the other day in another Bill. What is the light now given by the Imperial?—It gives 14¾ candles at my house.

1198. The next was the Phœnix?—The Phœnix is very nearly the same, 14½ to 14¾ at the present time.

1199. And the other?—And the Commercial is about the same, I think.

1200. Those three Companies are giving about 14 candles?—They are.

1201. And the price?—I am not sure about that; but I think it is 4 *s.* a thousand.

1202. I think you are right. Now, turning to another point in your evidence, you find fault with the way in which the Act of 1860 was expressed as to the thousand yards; do you remember, you told the Committee in 1860 yourself that, at the end of a longish length of pipeage, the illuminating power fell off considerably?—It did, in the first part of the pipe, but not afterwards.

1203. I have this in your evidence: "At works three miles off the illuminating power is fourteen candles, where it is twelve in the City." I suppose that ought to be reversed. It is on page 179?—Allow me to explain. In consequence of there being a discrepancy between the results obtained in the City and the results obtained at the Great Central works, it was proposed that we should make testings during one evening; the best testers in London were engaged in it with myself at three places, at the works, at the London Hospital, at the Laboratory, and at the testing place in Coleman-street in the City. The results of these testings were, that the gas of the Great Central lost about two candles in passing over the first thousand yards; but it did not lose anything afterwards. Therefore I said that the testings should not be less than 1,000 yards from the works.

1204. What was the nearest testing place?—I have made experiments at Birmingham at the works and at the testing place six miles off, and there is no appreciable loss of illuminating power with a good gas. A bad gas containing naphthaline and condensible hyrocarbons will lose two candles in the first thousand yards; but as the public take it over a long area, my recommendation was that it should not be tested at less than 1,000 yards from the works. That was the substance of my evidence, and it was misunderstood and probably misreported.

1205. Now you are going to explain this, which looks like a mistake in this evidence in this print of 1860: "I have told you the actual result of my experiments at the works three miles off; the illuminating power is 14 candles, while it is 12 candles in the City," is that right?—I will give you the particulars to-morrow, as I have not got them here. I have the exact result.

1206. Then we will go to another point; the difference between your present proposal and the Metropolis Act is this, whereas the Metropolis Act was, it shall

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be as near as possible the 1,000 yards, you say it should not be less than 1,000 yards?—Yes, and I go further than that; I say that the place should be agreed upon so that in future proceedings no technicality should arise; that in the next place the Companies should provide the burner and the meter, and that the testing should be by the officer of the local authority between certain times or hours of the evening, and in the presence of any one the Gas Company may choose to send as witness; knowing how difficult it has been to bring home a case in the City, I say the working of this Act of Parliament has come to this pass, that we must have a specific description of the mode of testing, exactly as is done in Paris, so that we shall have no technicality in regard to the quality.

1207. Is not this provision for the specific burner in the testing, and a variety of other things now put into the Acts which the Companies are getting through Parliament, voluntarily by them?—That is so; you have only put two things, and I do perfectly understand your question; and I say again, for fear of misconstruction, my answer to that question is, that more than two things are wanted to carry out this Act of Parliament, if there is to be an understanding between the public and the Companies in regard to the quality of the gas; there must not only be a testing at not less than 1,000 yards from the works, but it must be agreed upon as to the place of the testing; it shall be agreed upon moreover, or the Company shall provide the burner and the meter, and there shall also be somebody on the part of the Company present at the testing. Nothing of that is put in the Act of Parliament.

1208. Not in the Act of 1860?—Nor in any other Act of Parliament; there is not an Act of Parliament that has ever passed this House with it in; there are only two things provided for: not less than 1,000 yards from the works, and the burner; now I say more than that is wanted.

1209. Now, if we can get through these things, had you any hand in suggesting what was lately put into the Imperial Bill passing through Parliament?—The Marylebone Vestry and the Imperial referred it to me, to decide what burners should be used for 14-candle gas, and I drew up that clause, which they both agreed to.

1209*. Am I not right in saying the Bill which the Imperial is carrying through Parliament is, in these respects, dictated by you?—In these two particulars.

1210. What else does it want?—Something in the Act of Parliament which shall do away with any possibility of dispute in regard to the places.

1211. Did you suggest that to the Imperial Company?—I have had nothing to do with the suggestions to the Imperial.

1212. I thought you told me just now, you were referred to by the Marylebone Vestry and the Imperial Company upon their Bill?—No; you quite misunderstood me; I said I was referred to to specify the burner.

1213. If you tell me you were not consulted about anything else in that Bill, I won't put any more questions. Were you, or were you not?—I do not think I was consulted in anything beyond the burners.

1214. Had you the opportunity of suggesting to the Marylebone Vestry anything which you considered necessary to put into the Bill?—There was another thing, and that was the definition of the sulphur test.

1215. How is that defined?—I think it is put in.

1216. Will you just tell me how?—It is introduced in exactly the words of the Birmingham Act of Parliament.

1217. "In ascertaining and estimating for the purposes of this Act the amount of sulphur contained in the Company's gas, the process to be conducted shall be that known as Dr. Letheby's Sulphur Test, the description of which is as follows—that is to say, the gas shall be burned through a Leslie's burner at a rate of," and so on; we need not go into details?—Those were the two things, I believe.

1218. Now I think I am entitled to put this to you: you have been consulted by the Marylebone Vestry about one of the Bills of this Session; you advised them, and the Company took your advice, that there should be two provisions put in, one you mentioned about the burner and the other you mentioned about the sulphur test; are you satisfied with both those as far as they go?—I am.

1219. The other thing you want is the definition of distance?—That is already introduced into that Act, because it says, "not less than a thousand yards

yards;" but there wants this more, that the place is to be agreed upon between the company and the local authority.

1220. Are you aware that is already done by the Act of 1860?—No; in case of dispute the magistrate is to decide, but there is no agreement in the Act of 1860.

1221. Does not a provision in case of dispute imply that they may agree if they can?——

The *Chairman* said this would be very good evidence if they were assembled to frame the powers of a general Act of Parliament, but at present it seemed to be foreign to the inquiry referred to them.

Mr. *Denison.*] I am glad to be informed of that; I thought what you would try to do would be to find out the clauses which ought to be introduced into some Bill by way of improvement of the Act of 1860; Dr. Letheby started it in examination in chief, and it was natural I should cross-examine upon it.

Witness.] Mr. Denison is quite in error in saying that it is already agreed upon in the Act of Parliament about the appointment of a place.

1222. *Chairman.*] You are speaking of this particular Bill of the Imperial Gas Company?—I am speaking of the Act of 1860.

1223. That the appointment of a place is not within that Act?—It is left so that we cannot tell where we are to test.

1224. Mr. *Denison.*] Clause 27 states, "Every Gas Company shall, within six months after the passing of this Act, cause to be erected in some convenient place, as near as may be to 1,000 yards from their works (such places, in case of dispute between the Company and the local authority, to be fixed by a police magistrate, upon the application of either party, after the hearing of the parties thereon), with experimental meter furnished with a suitable burner," and so on. I won't argue the point with Dr. Letheby now?—I will give you an instance of the working of that.

1225. *Chairman.*] The whole question turns upon the wording of this clause, whether it should be "as near as may be to 1,000 yards," and Dr. Letheby's argument is, it should be "not less." I think that is the whole question between you?—At the time immediately after the passing of the Metropolitan Gas Act of 1860, it was found to be very inconvenient to go to the place fitted up by the three several Companies to make these testings, and a deputation of the several Companies waited upon the Commissioners of Sewers, who are the local authority, to agree upon a place, and I have here their resolution. They did agree upon the place where the testings are now carried on, and as soon as I found that the gas did not accord with the conditions of the Act of Parliament, they repudiated the agreement and said, "No, you must come to the 1,000 yards."

1226. Who said so?—The Companies; and they stopped the course of justice by that opposition.

1227. Mr. *Denison.*] Is not that the very case which is provided for, in which the police magistrate is to interfere?—I say again, there is not only wanted the clause that the testings shall be at a place not less than 1,000 yards, but the place shall be agreed upon, and then there shall be no further dispute.

1228. Mr. *Woods.*] By "agreed upon," do you mean defined in the Act?—No; I mean agreed upon between the local authority and the Gas Company; here they did agree, if I understand; and when the agreement had been entered into and they had paid a portion of the expenses for the fitting up of the place, and I found the gas was not equal to the requirements of the Act of Parliament, they said, "We won't allow the results of those testings to stand against us; you must come to our place of 1,000 yards."

1229. *Chairman.*] Was any reference made to a police magistrate?—Not on that occasion.

1230. Mr. *Denison.*] Now we will leave that subject altogether: now about your list of towns; it so happens that I have a return here?—I may say with regard to that reference the matter came before Sir John Musgrove, the magistrate sitting, and he would not give any opinion upon that; for he said, as one of the Commissioners of Sewers, he could not adjudicate; and when the Commission

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was reformed, certain of the aldermen were left out, in order that there should be magistrates to adjudicate; then, on the further prosecution of our inquiries before justices, the prosecution was stopped by objections taken by the Gas Companies to the jurisdiction of the magistrates, and we have never been able to do anything.

1231. *Chairman.*] That point has not been decided?—No.

1232. It has never been carried into a higher court?—No.

1233. Mr. *Denison.*] Has a more simple thing than that been done; the objection on the second occasion was that the proceedings were instituted in a wrong name; I want you to tell me whether any further proceedings were instituted in the right name?—Two objections were taken; one that the proceedings were instituted in the name of the Clerk of the Commission, as the proceedings always are instituted; but the justices ruled that he was not the proper person to take the proceedings, but that the whole body of the Commissioners should take the proceedings; and then another objection, and a very powerful one, was——

1234. That having been the objection made and allowed by the justices, I want to know whether the proceedings were afterwards taken in the right name?—We were advised by counsel that we had no jurisdiction in the City in regard to gas.

1235. Were any proceedings taken in any other name?—They were not; and I will tell you why; because it is no use taking proceedings; we had no power to do it.

1236. You think it is no use?—I know it is no use.

1237. *Chairman.*] The Doctor had better limit his answer to the first part, that there were no proceedings?—There were not.

1238. Mr. *Denison.*] Now, I was going to tell you, I have here the official report of Newcastle-upon-Tyne, which is one of your places; I must ask you, by way of putting a question, what is the information upon which you tell the Committee that the gas of Newcastle or other places generally has less than 20 grains of sulphur in it?—I tested the gas at Newcastle-on-Tyne myself; I do not know how many times, but I find the proportion in the gas to be rather less than five grains in 100 feet; those testings were confirmed by experiments made by others, and when the Newcastle-on-Tyne Company came to Parliament for another Act, they themselves put down 15 grains as the maximum of the sulphur; since that time I have seen reports of the proportion of the sulphur in the Newcastle-on-Tyne Gas Company over 20 grains, and if I remember rightly 40 grains; but I want to know the cause of that; a newspaper report is nothing to me.

1239. When you told the Committee this fact (what you considered a fact) about 16 grains, you did know that official people had reported the grains to be nearly 40?—I did; but I have given no results to the Committee, except those obtained by myself.

1240. However, you knew what other people had reported?—I did; but I do not believe it is so; I want to know the particulars of those testings.

1241. Liverpool is another place you mentioned; what sort of coal do they use?—They use Wigan cannel.

1242. What at Manchester?—I believe the same.

1243. Most of the gas in London is not made from cannel coal?—It is not; it cannot be.

1244. It is mainly Newcastle coal?—Mainly.

1245. Can you tell us what you consider the maximum illuminating power that can be fairly got from Newcastle coal?—I know 14 candles can be got from Newcastle coal without any cannel at all; and Derbyshire coal, Staveley coal, I know 14 candles can be got out of that, without a bit of cannel.

1246. I suppose we may say 14 will be about the maximum for all coal that is not cannel?—Yes; a very good light it is.

Re-examined by Mr. *Hoggins.*

1247. You say, at Newcastle there are 5 grains of sulphur in 100 feet of gas?—That is so.

1248. That was from Newcastle coal?—That was at Newcastle-on-Tyne, the place itself, and it was from Newcastle coal.

1249. When

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1249. When my learned friend mentioned something about an Act of Parliament which is now before a Committee, tell me, if you please, how long is it since that this agitation has been got up for them to take these steps?—The Imperial voluntarily came forward last year and adopted 14 candles.

1250. And then when was this agitation in the City commenced?—Well, sir, there has been a good deal of complaint in the City; but I do not think there has been any agitation, except during about 12 months.

1251. With regard to some other Company, the Phœnix, when did they do that?—That I do not know; but ever since I have tested the Phœnix, it has been 14 candles, and the Commercial too.

1252. You said you were consulted about the burner, and the sulphur test; when was that?—Just this time last year.

1253. I am told to ask you this: you said the gas of the Imperial, the Phœnix, and the Commercial, was 14¾ candles; was that under the new burner or the old burner?—The new burner.

1254. What would it have been under the old?—It would have been about 13.

1255. Mr. *Woods.*] A good deal has been said in your examination about the mode of procedure at Paris; have you any tests of quality?—Yes; I have tested the Paris gas again and again.

1256. What coal do they use?—That I cannot tell you; I do not remember the coal.

1257. What is the quality as compared with the London gas?—It is 12-candle gas.

1258. What is the quantity of sulphur?—Not above six grains.

1259. How do they extract the sulphur from it?—They use a coal which does not contain much pyrites. It is weathered a good deal and washed, so as to get rid of the pyrites from it.

1260. Am I right in supposing that they take some trouble and expense to get rid of the pyrites?—Some they do, no doubt.

1261. *Chairman.*] Perhaps it does not exist in the coal?—It does; but they adopt measures to get rid of it.

1262. Do they pick it?—They crush it, and wash it, and adopt plans.

1263. Is it prepared?—To some extent.

1264. Mr. *Woods.*] Are you prepared to hand in the tests of the quality of the Paris gas?—I can tell you that at once. Mr. Ellison with Mr. Barlow have reported on the quality of the Paris gas, and I can leave this with you. I see in one case, where a Belgian coal of the name of Horna was used, the proportion of sulphur in the 100 feet ranged from 2·76 grains to 7·65 grains in the Paris gas. In another, French coal, called the Denain coal, used in the manufacture of Paris gas, the proportion of sulphur ranged from 1¾ to 5¼ grains.

1265. What is the price of gas in Paris?—I forget.

1266. But they take the trouble to get rid of the pyrites from the coal?—I believe so.

1267. You said London coal was not sufficiently picked in your evidence?—Yes.

1268. By picking it before commencing the manufacturing they could, I believe, prevent much of the sulphur from being contained within the gas?—That is so.

1269. In the use of Newcastle coals, do they use the best coals from Newcastle for the London gas?—They are, to a certain extent, compelled to use that which is in the market; but there is always a means of contracting for coal with not a large per-centage of pyrites in it.

1270. You described the tests made from Newcastle coal generally being capable of 14 candles, and the coal from Staveley, Derbyshire coals, as being capable of 14 candles; have you at Liverpool or Manchester, the places you have mentioned, tested the gas made from cannel coal?—Yes.

1271. Is it within your knowledge that, in the interpretation of terms in the Act of 1860, it says, "the words 'cannel gas' shall mean gas of an illuminating power hereinafter defined of not less than 20 candles"?—Yes.

1272. Then I apprehend cannel gas so called by the Act is not necessarily made from cannel coal?—Oh, yes, it must be; you cannot get any gas, except from cannel, of 20 candles.

1273. Do you know anything of the relative price and cost of gas made from

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cannel coal?—It is very costly and becoming more and more costly every year, so that we must abandon cannel gas before long.

1274. Do you recommend that there should be two standards of quality in London?—No, I do not; I recommend only one.

1275. Why not?—Because the cannel that is capable of producing cannel gas is very limited in extent; it probably won't last 20 years, and it must necessarily, year by year, as the experience of gas engineers can show, become more costly; it is becoming so costly that it cannot be manufactured by-and-by at the price that is put there.

1276. You know that the cannel will not last 20 years, I apprehend, of your own knowledge?—No, I have heard it.

1277. I thought it was hearsay evidence, because I know to the contrary?—There is a cannel in Scotland; but the cost of purifying it is such, that I think that alone will be the reason of abandoning it.

1278. Is that the Lesmahago cannel that you speak of?—That is one; but the Scotch cannels generally are charged with sulphur.

1279. Do I understand you correctly, that you recommend the testing to be in the hands of a public body, and not in the hands of the Gas Companies?—Yes; I recommend that the testing should be in the hands of an officer appointed by the local authority.

1280. And that the Gas Companies should be called in to witness the testing which they do not themselves make?—They should be permitted to be present, but not to interfere.

1281. Do you recommend the testing to be publicly advertised from time to time?—Yes, I do.

1282. Then, in point of fact, it is a correct deduction to draw from your evidence, that there is in England an immense quantity of good coal which might make gas with much less quantity of sulphur in than 20 grains?—Yes.

1283. And there is no limit to the supply of that kind of coal?—I should think not.

1284. A good deal has been said about the mischievous effects which result from purifying by lime; is there any reason why the gas works should not be moved out of the town, any scientific reason?—I do not think there is.

1285. And then the gas might be purified by lime?—I know gas will travel six miles without losing any illuminating power.

1286. I am asking you for a scientific reason, not for a financial reason?—There is no scientific reason whatever.

1287. Mr. *Hartley*.] Do you know from your own testing that the Newcastle coal does produce gas containing only five grains of sulphur in 100 feet?—Certain Newcastle coals; not all of them.

1288. Then it is a mere question of picking a proper proportion of the coal rather than the coal itself?—To a large extent it is so, not altogether.

1289. Do you know the total consumption in London for gas purposes?—I believe there are about 35 millions of gas made every day in London.

1290. What is the total consumption of coal annually?—There would be about 30,000 tons of coal used every day, I believe.

1291. Mr. Alderman *Lusk*.] You mentioned that wax candles were not the best for testing illuminating power?—Yes.

1292. What did the Act of 1860 say with reference to that?—It mentions sperm candles; the same number is kept; but the candle is changed from wax to sperm; which is a change of from 14 to 16 in power.

1293. Who selects those candles?—There had been evidence brought before the House for some years before, that sperm candles are the proper standard, and it has been adopted in all subsequent Acts of Parliament.

1294. Who chooses the candles?—The candles are chosen by the tester.

1295. Do you buy the best candles in the market?—We buy the best; and I may be permitted to say this, that sperm has become so exceedingly scarce that it is being adulterated by paraffin to a large extent, and in other cases it is being adulterated with wax. We find it very difficult to get a standard; the time is coming for changing the standard.

1296. And then different makers make the candles of different-sized wicks?—They arrange the sperm candles in a burning range, from about 116 grains of sperm per hour, up to something like 142 to 143, and that is dependent upon the size of the wick; it is dependent also upon the sort of cotton; and during the time when we could not get much American cotton, we had great difficulties

difficulties in getting a sperm candle to burn at all regularly; the sperm is so adulterated with paraffin and with wax that it is no longer a standard.

1297. It is difficult to get a standard?—We must come before long to another standard, and that standard is a lamp such as they use in Paris.

1298. It is a difficult thing to take a candle as a standard at all in the present state of things?—It is full of difficulties.

1299. *Chairman.*] What do they burn in that lamp at Paris?—Colza oil, which is a refined rape oil.

1300. Mr. Alderman *Lusk.*] That would be a superior standard to the candle?—Very much.

1301. With reference to this burner, who selects the burner; how has it come into your hands to be a correct burner that you test by?—The Companies, according to the terms of the Act of Parliament, have the power of providing the burner; if the burner fulfils the condition of the Act of Parliament, having 15 holes and a 7-inch chimney, burning 5 feet an hour, I do not think the tester can refuse to take it.

1302. You have mentioned the present burner is different from the burner you had, and you proved it by an instrument here?—Yes; when I test the new burner as against the old burner, there is a difference of 11 per cent.

1303. Have you an accurate test with reference to a burner?—I have; I have now, I think, a burner which can be defined for the particular quality of gas.

1304. Is the present burner used for testing, the burner that the Legislature contemplated in 1860?—No; I do not think the Legislature contemplated any particular kind of burner; the burner in use in 1860 is different from that which is in use now.

1305. There was a burner generally understood in 1860?—Yes.

1306. Is the burner that is used now the same burner that was used at that time?—No, it is not.

1307. Now you say, as a scientific man, that gas can be produced to the metropolis to contain, without any difficulty, not more than 20 grains of sulphur?—In 100 feet, I say so.

1308. There is no difficulty in that?—No difficulty beyond the cost.

1309. I think that is evident to us from the City gas, because you prove with the City gas that that is so?—That is so.

1310. Therefore I think that is the best proof; now in reference to lime; you cannot use lime in the City?—No.

1311. Why?—Because of the difficulty of carrying it away; it is so offensive a thing that it cannot be carried through the streets.

1312. Is it damaging to health?—It is very offensive; a most noxious thing.

1313. Would it be better to remove gas works out of towns altogether?—I think so. I do not think they are well placed in a crowded locality.

1314. You say it is desirable to have gas that is as little sulphurous as possible. Very well; you can get gas made with a great deal less sulphur by using the lime; *ergo*, if you take it out of the City and use the lime, you will get good gas; indeed, you cannot get good gas without?—Lime may be used after the iron, but I say that demands a large space for purifiers, and it is very costly also; then lime used after the iron is not offensive. The iron takes away all the offensive part of the gas; but it does not absorb those impurities which the lime takes off.

1315. Looking at the Act of 1860, confining yourself to that, do you think that Act is a workable Act in the sense that we understand by things useful to the public?—No, it is not.

1316. You think it is not a workable, useful Act?—I am certain of it. It is a wholly unworkable Act in the City.

1317. I mean having regard to the interests of the great public of the metropolis?—That is so. It is a perfectly unworkable Act.

1318. Mr. *Kinglake.*] I find this statement in your report: "The chemical quality of the gas in one particular is rarely equal to the requirements of the Act of Parliament." That has reference to the three Companies you have mentioned?—Yes.

1319. You then go on to say, "I allude to the excessively large amount of sulphur which has been almost always present in the gas supplied to the City."

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Is that your opinion now upon the facts you have stated, that you now give before this Committee?—It is so.

1320. If I understood, with reference to these three Companies, prior to 1860, the average amount of sulphur was under 20 grains?—It was.

1321. What did they then use as a purifier?—They used mostly lime. Though they did not use it altogether, they used it largely.

1322. What is the greater difficulty of using lime now than existed then?—The complaints that were made by the sanitary officers of the district, of the nuisance arising from this spent or exhausted lime.

1323. When did they begin to use the iron?—The patent, I believe, is just out. Perhaps they began to use it seven or eight years ago; it was not fully used until comparatively recently—until the Act of 1860.

1324. I wish to have it clearly explained as to the consequences of the sulphur being in that gas; I mean in the ignition. A sulphurous acid is formed?—That is so.

1325. If that combines with oxygen it becomes sulphuric acid?—That is so.

1326. And that is a most destructive element to leather, to fabrics, and to everything coming in contact with it?—Yes.

1327. I find in your report, with reference to this Act of Parliament, you say, "The issue of these inquiries leads to the conclusion that there must be much clearer provisions for the method of testing the gas and for enforcing the penalties; for, as the law now stands, it may be violated with impunity"?—Yes.

1328. Is that the opinion you still entertain?—Oh, yes. It is not a mere opinion; it is a fact.

1329. I wish to know is that the opinion which you entertain now?—Yes.

1330. Mr. *Morrison.*] May I ask if in any towns there is a higher standard of purity for sulphur than in this Act? Yes; in the Newcastle-on-Tyne Act there are 15 grains of sulphur. I think there is one Act with 10 grains; I am not sure.

1331. Do you know of your own knowledge whether they have been able to enforce such a standard of purity as 15 grains; may I ask if you are at all acquainted with the mode of making gas out of petroleum?—I do not know anything about it.

1332. Mr. *Staniland.*] Which part of this Act do you say is unworkable?—First, with respect to the testing place; it is not possible for any number of officers appointed by the local authorities to carry out testings at one place, that place being provided by the Company. Then we find that they object altogether to the results that are obtained in those very places which they had agreed upon as the proper places for testing, and which they paid partly for in the fitting up.

1333. That is a particular question to which you refer; are there any other questions in respect of which this Act is perfectly unworkable, as you say?—There is no recovering penalties in the City, for there is actually no jurisdiction.

1334. Are these the only reasons why you say it is perfectly unworkable?—They are very large ones.

1335. Are they applicable to London, or do they extend to the whole metropolis?—The peculiarity of the jurisdiction and non-jurisdiction is peculiar to the City.

1336. But the testing applies to every part?—Yes.

1337. And it is only in those particulars that you think the Act is unworkable?—That is so.

1338. You stated generally just now that the Act was altogether unworkable, but you confine it to those particulars?—Those are the only two particulars of the Act, quality of gas and jurisdiction.

1339. You do not allege anything against the quality. It was stated yesterday by a witness who came here to complain of the quality of the gas in the City that it was very much inferior to the gas in Edinburgh, which he also used. I believe I understood you to say, in the course of your evidence, that the Edinburgh gas was so peculiar that it would not do to contrast it with London gas. In what respect is it peculiar?—It is cannel gas.

1340. Therefore manufactured at a much greater cost?—Yes.

1341. There is no doubt it is very much superior to the London gas?—It is superior

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superior as regards illuminating power, but I should hesitate a good deal, irrespective of the scarcity of the cannel, before I recommend cannel.

1342. Is the Glasgow gas manufactured from cannel?—Yes.

1343. So that in testing London gas with Glasgow and Edinburgh gas, it is not at all a fair comparison?—It is not; they are in beds of cannel, and they are able to work at a cost they cannot in London.

1344. Does it not come to this; that if you are disposed to pay for it in London you can have a much better gas than you have?—Exactly.

1345. Mr. *Paull.*] You say that there is no jurisdiction under this Act in the City; are you sufficiently acquainted with it to know the sections 7 to 12, which empower any twenty independent householders to apply to the Secretary of State, and that then the Secretary of State shall appoint an inspector, and that there shall be a penalty for obstructing the inspector, and that the Secretary of State may make orders, and, in default of obeying those orders, a penalty may be imposed of 50*l.* for each offence?—Yes.

1346. In your judgment, is that giving no jurisdiction to ratepayers and consumers in the City of London?—It is equivalent to it; you will not find twenty ratepayers to come forward and be public prosecutors; I know it from the adulteration of food Act; it is a dead letter, for the simple reason that the public must begin the inquiry, and though that clause looks very admirable in print, it is utterly worthless in practice.

1347. Mr. *Staniland.*] Are you aware of the other clause, where any person paying 10*s.* 6*d.* can have your report?—They can; we have no magistrate in the City to decide that.

1348. Mr. *Morrison.*] Since the constitution of the Board, have you ever tried to take proceedings?—Yes, and we were thrown upon technical grounds.

1349. After the Board was re-constituted?—After the Board was re-constituted.

1350. Mr. *Woods.*] The complaints I apprehend must be complaints within the Act?—Yes.

1351. There must be just grounds of complaint within the Act; it is not competent for the consumer to complain of the Act itself?—No.

1352. Any complaint that he may make must be a complaint within the Act?—Besides there is the routine of it; a long notice must be given; the inquiry must be conducted in a formal manner, and altogether it would be utterly impossible to work upon that clause.

1353. Mr. Alderman *Lusk.*] Practically, you say it is inoperative?—Practically, as far as the City is concerned, the Act of Parliament is really inoperative.

Dr. *Thomas Hillier*, called in; Examined by Mr. *Sargood.*

Dr. *T. Hillier.*

1354. You reside at No. 32, Queen Anne-street?—Yes.

1355. Are you chemical examiner to the parish of St. Pancras?—I am.

1356. And have you been so since 1860, when the Gas Act was passed?—Since the beginning of 1861.

1357. I believe the parish of St. Pancras is mainly supplied by the Imperial, is it not?—Yes.

1358. Have you had occasion, as examiner, to make very many experiments?—Yes; I have made experiments three times in each week.

1359. Have they been with a view of testing both the illuminating power and purity?—Yes.

1360. Do you go to a testing-house provided by the Company, or to one provided by the Local Board?—To a place provided by the Local Board usually.

1361. In that place provided by the Local Board, tell me, by whom is the apparatus provided for testing?—By the Local Board.

1362. And by whom is the burner provided?—The burner is provided by the Local Board also, but it is not the burner that was originally fitted by the Board.

1363 Has the burner been changed at the instance of the gas Company?—It has.

1364. Do you now use one of the same description which they use at their own testing place?—Yes.

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1365. Just tell me, in your experience, comparing those two burners with each other and with the same quality of gas, what is the difference between the effect of the two burners?—There is the difference of a candle and a half in favour of the burner provided by the Company.

1366. In favour of what we call the new burner?—Yes.

1367. To be sure that I quite follow you, you mean that the identical gas which with the old burner would produce 12 candles with the new would appear to produce $13\frac{1}{2}$?—Yes.

1368. Then I need scarcely ask you perhaps this; do you consider that the new burner is the same identical test as that which was suggested by the Act of Parliament, and used at the time it was passed?—It is difficult to answer that question; I do not think that it was the test contemplated by the Act.

1369. And if it produces different results on the same gas you would hardly call it the same actual test scientifically, would you?—It was not the test intended, I believe, by the Act.

1370. That is not quite what I asked you; I am quite willing to take your answer when I get it, whichever way it is; as a scientific man, seeing that the same gas by the two tests produces different results, would you call the two tests identically the same in a scientific point of view?—No.

1371. Then I believe the difference would be this, that the advantage of light would be gained by the new burner rather than by any increase in the purity of the gas?—That is so.

1372. Now, let me see whether I follow that quite in its results. Supposing the old burner showed that the gas was up to the parliamentary standard, that you would take as an adequate test of its purity?—Yes.

1373. At the same moment a new burner would show that it was above the standard?—Yes.

1374. Then, may I infer from that, that if the burner comes simply up to the Parliamentary standard, the gas will necessarily be inferior in quality to what it used to be when tested by the old burner?—Yes.

1375. Then the introduction of the new burner has a tendency to allow the Companies to use an inferior gas, and yet come up to the standard?—Yes.

1376. What do you consider to be the vice in the Act of Parliament as regards the description of the Argand test?—It does not define the size of the internal aperture, nor the pressure at which the gas should be consumed, nor the size of the hole.

1377. In fact, there are many conditions wanting to enable the test to be a safe and permanent one invariably?—Yes

1378. Do you consider the use of an Argand burner the proper mode of testing, or is there any other mode you would suggest?—I believe, with common gas, that is the best burner.

1379. Now I will ask your attention to the two burners: are these the old and the new (*producing two burners*)?—That would be, as nearly as one can tell, the old, and this one the new; that represents the difference very fairly.

1380. Just describe to the Committee what is the mechanical difference in the construction of the new burner?—The internal aperture is smaller; the holes are larger; the material is different, but that is matter of no moment.

1381. Is there anything in the mode of producing combustion by that alteration, which renders the burner less fit for ordinary use for business and home consumption than the old one?—It is more difficult to prevent smoking with the new burner.

1382. Do you consider that it is a burner that could fairly be introduced to the consumers as one that they could use advantageously, and without difficulty or inconvenience?—I do not think they could.

1383. *Chairman.*] There are the same number of holes?—The same number of holes; the Act requires that.

1384. Mr. *Sargood.*] Will you be kind enough to explain to the Committee why it is that there is that difference in the combustion; explain it scientifically as to that product of smoke and want of combustion?—The draught through the central aperture is much stronger.

1385. *Chairman.*] Then it is contraction?—Yes, and the holes being larger, the gas escapes more rapidly.

1386. Mr.

1386. Mr. *Sargood.*] And has that the effect of producing smoke unless there is a very accurately adjusted pressure?—With the least increase of pressure, smoke would be produced; the new burner is suitable for burning at a very low pressure; if the pressure is increased accidentally from any cause, as the slamming of a door, it would give rise to smoke.

1387. We have heard from many of the consumers that when they complain of want of light, their only means is to turn on the gas more fully; I suppose you call that an increased pressure for the time being?—Yes; the pressure is increased at the orifice.

1388. Therefore if they were prevented from turning it up on account of this inconvenience, they have no means of meeting the difficulty in the use of that burner?—They cannot burn with that burner more than five cubic feet an hour to advantage.

1389. Then I suppose you would say this also, that whatever burner is used at the testing place, whether very scientific or otherwise, it ought to be such a one as consumers ordinarily could use without difficulty?—Yes; I think that would give a fair notion of the value of the gas.

1390. Now with regard to the question of purity; how have you found the results of your tests as to purity?—I have found with reference to sulphur, that the Company has generally acted within the provisions of the Act, that they have not exceeded the 20 grains in the 100 cubic feet.

1391. *Chairman.*] Are you speaking of one, or more than one Company?—The Imperial Company only.

1392. Mr. *Sargood.*] As far as you know they do that without any difficulty?—Yes.

1393. From your knowledge of the manufacture of gas do you consider there is any necessity for the presence of 20 grains of sulphur per 100 cubic feet?—I do not.

1394. Do you consider that a much higher limit for the protection of consumers than ought to be fixed by Parliamentary arrangement?—I think it is a higher limit.

1395. Speaking in a medical point of view, do you consider that the presence of 20 grains of sulphur in 100 cubic feet of gas consumed, is deleterious to health?—I think it is more injurious to property than to health.

1396. Certainly injurious to each, though in different proportions?—Yes; the Company has not complied with the Act with reference to ammonia. The quantity of ammonia has generally exceeded what is permitted by the Act. The test is that on exposing turmeric paper to a current of gas at half an inch pressure, there shall be no discolouration.

1397. What has been your experience with respect to that?—That the paper has nearly always been discoloured by it.

1398. *Chairman.*] You find it in excess?—Yes.

1399 Mr. *Sargood.*] What paper have you used for that?—Ordinary bibulous paper dipped in solution of turmeric.

1400. In a dry or a damp state?—In a damp state.

1401. Scientifically do you think that is the proper test, to use it in a damp state?—I think that is the only way to use it.

1402. I see that is not provided for by the Act of Parliament; do you think that is another of its failings?—If there is any room for doubt about it it should be specified.

1403. What has been your experience as to the quantity of ammonia from your test?—That the paper is always coloured, sometimes slightly and sometimes highly coloured.

1404. More so than it should be?—It should not be coloured at all; the Act prescribes that the paper shall not be discoloured, and it nearly always is discoloured.

1405. That is your invariable experience?—Not quite invariable, but nearly so.

Cross-examined by Mr. *Burke.*

1406. Now, Dr. Hillier, since when have you been appointed Inspector?—The beginning of 1861.

1407. Let me ask you, as a general question, you have conducted experiments very frequently, have you not found the Imperial Gas Company fulfil in the

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the main all their obligations in a very efficient manner?—I think they are better than many other Companies.

1408. That is not quite an answer to my question; looking to the obligations imposed upon them by the Act of Parliament, looking to the reports which I have before me, have they not fairly, to the extent of their ability, complied with the Act of Parliament?—It depends entirely whether they are entitled to use the new burner.

1409. Now, before 1860, are you aware that the illuminating power required to be given by the Imperial Gas Company was 12 wax candles and not 12 sperm candles?—I believe it was so.

1410. So that in 1860, by the operation of the Metropolis Gas Act, the public got a higher standard of illuminating power than Parliament had imposed as an obligation on the Imperial Gas Company before that time?—Yes, that was an advantage.

1411. That was one of the advantages that the public got by the Metropolis Gas Act; well, now, did you in 1861 report that in your judgment the burner which you then used for testing the illuminating power of the gas was unfair to the Gas Company?—Yes, I did.

1412. Was that a burner that was adopted by your local board?—It was the one fitted for me by Mr. Wright, he having been requested to fit up such a burner as had always been in use for that purpose.

1413. All the apparatus, if I understand, under which you conducted your experiments have been apparatus found by the local board over which the Company have had no control whatever?—It has been so.

1414. So that you have the most ample means of testing the quality and illuminating power of the gas, according to such means as the local board themselves might point out?—Yes.

1415. And according to the means so pointed out by the local board, and using their apparatus over which the company had no control, I think you have found, by your report, that the illuminating power has been always above the standard required by Parliament?—Not always.

1416. I do not find a single instance. If that is a proper return, I find on one day, and one day only, that we are 12 candles, not below it, but 12 candles; in every other case the company appears to be largely in excess of the illuminating power required?—That occurs in 1862, in June and July.

1417. I find that once only?—And it is again in March 1864.

1418. I do not find it in one instance?—It is so in my books.

1419. I find in every instance except one they have been above it?—In my own book at home, which is the best authority; in March and September, 1864, they fell short; two months in 1864, and two months in 1862.

1420. On how many occasions in those two months?—I cannot speak to that point unless I had the book here. I have only the minimum here.

1421. Will you undertake to state that there are more than two days in five years that the company has been below the standard?—Since I have used the new burner, according to that burner it has not been below.

1422. On every occasion except two days in five years?——

Chairman.] He said twice in 1862 and twice in 1864; that would be four days.

1423. Mr. *Burke.*] Take it four days; then, except four days in five years the company has been invariably above the standard required by Parliament?—That is so with the new burner.

1424. And on all those occasions the burner used by you has been a burner which your employers, the vestry, have thought the proper burner to be adopted?—I do not say that. The company have claimed the right of using such a burner, and the vestry did not think in point of law they would be able to maintain the point.

1425. Of course the burner does not in the slightest degree alter the quality of the gas?—The gas is the same, of course.

1426. Therefore, as regards the use of that burner do you know Dr. Letheby has here stated distinctly that it is a burner which may be used generally?—I heard him say so. It can be used if proper precautions are taken; but I think the precautions are so great that they are not likely to be used by ordinary consumers.

1427. What is the relative cost of the burner?—The cost is not a matter of much moment.

1428. They

1428. They are practically the same cost?—It is not an expensive burner.

1429. One burner will give a higher illuminating power than another burner?—Yes.

1430. Then do you think the consumer will voluntarily deprive himself of the higher illuminating power?—The reason why it is not fit for the consumer is that it is only fit for burning five cubic feet of gas in the hour.

1431. The less he consumes the less he pays for?—But if he burn more he does not get any advantage from that burner; he wastes his gas.

1432. If from five feet an hour he will get as high an illuminating power as with another burner burning seven feet, is not it economy to use the new burner?—If the consumer knew all the principles on which gas should be burnt, it might be all very well.

1433. He is capable of learning that, I suppose?—It is rather a difficult thing.

1434. What do you require as an alteration of the existing law?—That the burner should be accurately defined.

1435. Is that all the amendment you require in the Metropolis Gas Act?—I am not here to say that; I am only here to express my opinion on the present state of things.

1436. During the time you have been in office, is it your opinion the Gas Act has acted efficiently for the protection of the public?—I think the gas is very much the same as it was when I first began to test it; I have no experience of it before.

1437. Since you began to test it, have you found under the operation of that Act, that the Companies where you have tested it have fulfilled the obligations which that Act has imposed upon them?—I think they have complied with the letter of the Act, except on the point of ammonia, but I do not think they have complied with the spirit.

1438. Does the Act give an efficient means of ensuring the fulfilment of its provisions?—It does not.

1439. Now, let us see, have you at any time sought or had occasion to seek to put any of the clauses of the Act in operation against the Company?—No.

1440. Is it by reason of the inefficiency of the clause, or what?—The clauses are not at all explicit enough.

1441. Which particular clause, for instance, if the Company does not supply gas of the requisite purity and illuminating power, there is the means of redress, is there not, by going to a magistrate?—Yes.

1442. Have you ever done that on any occasion?—No.

1443. Can you state from any experience that the provisions of the Gas Act have been inefficient for the purposes for which they were intended?—I think that the Act was intended to give us a gas of a certain quality which is not secured in consequence of an improvement in the burner.

1444. You have told us it requires a specific quality of gas, illuminating power, which the Companies have given before?—I said just now they have complied with the letter of the Act of Parliament, but I do not think they have complied with the intention of the Act.

1445. We can only take the intention of the Act from the wording of the Act?—At the time that Act was passed the only burner that was known——

1446. You come back to the burner?—It all turns upon the burner.

1447. The only amendment you would suggest in that Act of Parliament is to define a particular burner?—That is the only point I am speaking to at the present moment.

1448. Now, about ammonia; you have never conducted gas works?—I have not.

1449. Is not it a fact, that if you wash out the ammonia entirely from gas you destroy its illuminating power?—No.

1450. Will you undertake to state that?—I have that from the authority of very good chemists, and from my own experience I am quite certain I know it has nothing to do with the illuminating power of gas whatever.

1451. What process would you adopt for taking ammonia entirely out of gas?—That is a practical point on which I prefer not to give any opinion: I am not a manufacturer of gas.

1452. Then you are not prepared to state any process by which the entirety

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of the ammonia can be taken out without destroying the illuminating power?—I know it can be done, and it is done by some of the Gas Companies.

1453. You are not prepared to say how?—I am not prepared to say how.

Re-examined by Mr. *Sargood.*

1454. You know, I suppose, practically it is done?—It is done by some Companies, as we have heard from Dr. Letherby, who has had great experience on these subjects.

1455. Do you know any reason why the other Companies who do not do it should not do it?—I do not.

1456. You have told us by your experiments in 1861 and 1862 you found the candle test above the amount prescribed by the Act of Parliament, but that was under the new burner?—The gas was below the standard, even with the new burner in 1864; on one occasion it was below with the new burner.

1457. May I take it generally, it was above?—Yes.

1458. But having regard to the distinctive features of the two burners, would it have been above the Parliamentary standard if tested by the old burner?—It would have been below the standard on frequent occasions.

1459. Mr. Alderman *Lusk.*] Is the new burner, scientifically considered, the best possible burner that can be got?—It is much better than the old. If you were to use 5 cubic feet of gas with a 15-hole burner—if you use that, it is the best burner for that purpose.

1460. Mr. *Woods.*] Would a bats-wing burner be a good test?—Not for the common gas. You can get even a better light with a 30-hole Argand burner than with a 15-hole.

1461. Mr. *Hartley.*] Is that burner made in accordance with the Act of Parliament?—It complies with the letter of the Act.

1462. Mr. *Paull.*] I think you said the new burner was not good for ordinary consumers to use?—I did; because if they use more than five cubic feet of gas it causes smoke and wastes the gas.

1463. If it is represented that smoke has increased and goods have been deteriorated during the last few years, by the quantity of gas which has been consumed, it may be due rather to the burner than to the quantity of the smoke?—I do not think the consumer would use the new burner at all. I think it is due to the increase of sulphur in some of the Companies' gases.

1464. If the new burner had been used, it is perfectly possible that this deterioration of the goods was due to the burner rather than to the inferior quality of the gas?—Yes, because the gas would escape unconsumed.

Friday, 27th April 1866.

MEMBERS PRESENT:

Mr. Dutton,	Sir John Ogilvy.
Sir William Gallwey.	Mr. Paull.
Mr. Hartley.	Mr. Hastings Russell.
Mr. Serjeant Kinglake.	Mr. Staniland.
Mr. Lusk.	Sir John Trollope.
Mr. Morrison.	Mr. Woods.

SIR JOHN TROLLOPE, IN THE CHAIR.

Dr. *Henry Letheby*, recalled: further Examined.

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1465. Mr. *Hoggins.*] Do you produce a statement of the comparative illuminating power of the Chartered and Great Central Gas Company before the passing of the Metropolis Act of 1860 and since; is that what you produce?—Yes.

1466. Have you another table which you have prepared since you were here last night?—I have.

1467. What is that?—It is a table of the proportion of sulphur that I find in gas in the various towns in England I mentioned yesterday. The range of sulphur in those towns is from a little less than four grains in 100 cubic feet to 22·26 grains, and the average of the large towns of England is 13·16. The smaller proportion is 3·59, Exeter.

1468. Have you anything further to add as regards that new statement?—Yes, I have. If I may be permitted, I would refer to a memorandum which I have made of what, in the course of my experience as gas analyst in the City of London, appears to me to be absolutely necessary for the improvement, or for the working of the Metropolis Gas Act of 1860.

1469. *Chairman.*] On what grounds?—First, that there is a necessity for the improvement of the illuminating power of the gas; secondly, an improvement in the chemical quality of the gas.

1470. I think, perhaps, you had better state to what extent you require improvements on each head?—I have been obliged to come to the conclusion, after a large experience, that London is better without the cannel gas. Fourteen candle gas, I think, is good enough for London.

1471. You do not recommend cannel gas?—No, I do not, not only because cannel is so scarce and has become so much dearer, but because cannel is not, in my judgment, the right kind of gas for London, certainly not for practical purposes; then it is a gas that may be made from Newcastle coal without any cannel, and from Derbyshire, Staveley coal.

1472. That is a hard coal?—It is a hard coal, a gas coal; next I think it necessary that there should be an improvement in the chemical quality of the gas.

1473. You are alluding to sulphur?—Yes, I am alluding to sulphur chiefly; I think, at present, the clauses with regard to sulphuretted hydrogen and ammonia may stand as they now stand with regard to the proportions, but I will come directly to the question of how I think the testing should be made so as to guard against any dispute hereafter; the proportion of sulphur in those cases where gas is made out of London, where they can use lime, I think should not be more than 16 grains, but where for sanitary purposes it is difficult, if not impossible, to use lime, then I think the present quantity should stand 20; that is, by picking the coal with the oxide of iron for the purifier; there is no

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difficulty in keeping it down to 20, but in those cases, where lime can be used, the lime will certainly bring it down below 16; next, I think it necessary that there should be a definition of the place where the testing of the gas should be made; first, that it shall be at a distance of not less than 1,000 yards from the works, that it shall be chosen by the local authority, and if the situation is objected to by the Gas Company supplying that district, the place shall be fixed by a magistrate, or, if in the City, by one of the justices.

1474. By one or more?—By a magistrate, or, if in the City, by one of the justices.

1475. Mr. *Hartley.*] Who is the local authority?—We will come to the local authority presently; next, I would say that there shall be only one place for testing the gas in each district supplied by each of the works of the Gas Companies, that will make 20 in all in London.

1476. Mr. *Richards.*] Twenty places?—Only one place; not as now, when one vestry may have one place and another vestry another, and there is a conflict of testimony; but there shall be only one place for each district supplied by each of the works of the Companies; and there being 20 works there would be 20 places; I may say, as I go on, that these regulations are founded upon the study which I have made of that which is practically carried out in Paris; fourthly, that the methods of testing the gas for illuminating power and chemical quality shall be clearly and precisely described in every particular, so that one tester shall not be making it one way and another tester another way.

1477. *Chairman.*] You do not contemplate any improved system of tests?—Yes. I do; I will come to that directly; with regard to the testing of the illuminating power of the gas, the burner shall be precisely described in all its parts and measurements; that is done in Paris exactly, and we can do it here; the working standard of light shall be defined, and if it be the flame of a Carcel lamp, the particulars and measurements of it and of the lamp and of its rate of burning should be precisely defined, exactly as in Paris.

1478. Mr. *Richards.*] And the quality of the oil?—The quality of the oil.

1479. Mr. *Morrison.*] May I ask how is Paris supplied?—It is supplied by one Company having seven stations round Paris; the actual process to be followed in making the experiments should be described; how long the lamp is to burn and the gas is to burn before the experiment is made, because a burner just lighted will give five per cent. less light than a burner which has been burning for ten minutes or a quarter of an hour; the time for making the experiment should be fixed, at from 5 p.m. to 10 p.m. in winter, and 8 p. m. to 11 p.m. in summer; with respect to the tests of purity, the exact means of ascertaining the presence of ammonia should be described, how the paper is to be made, that it is to be used wet, and how long it is to be held at the jet, and what rate the jet is going, and the aperture; the exact means of ascertaining the presence of sulphuretted hydrogen should be described; that is done at Paris; the paper is described, how it is to be dipped, and the mode of holding it over the gas so that no question arises about it; next, the exact process for ascertaining the amount of sulphur in any form in the gas should be described, as it is in the Birmingham and Staffordshire Gas Act of 1864; the period of the day and night when the experiments for estimating the purity of the gas should be fixed, as from nine in the morning to nine in the morning of the following day.

1480. Mr. *Morrison.*] You test it continuously all that time?—We must for sulphur; for sulphur the experiment is 24 hours; we may find perhaps in the course of ten minutes or a quarter of an hour, a little access of sulphur, which may be balanced in the course of the day, and it is not fair to either party to take the gas for less than 24 hours; fifth, provision should be made for ascertaining and recording the pressure of the gas at each of the testing places during the whole period of from nine in the morning of one day to nine in the morning of the next, so that the public may have a guarantee that they are supplied with sufficient pressure; sixth, the cost of maintaining the testing places, and providing the necessary apparatus should be paid by the Companies of the respective districts in which the testing places are; that is so in Paris; the Paris Companies pay for the cost of the rooms and the apparatus, the necessary apparatus being selected by the local authority; seventh, the appointment of the officers to test the gas should rest with the local authority, and the

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local authority should be empowered to pay the salaries of the officers out of some specified local fund; eighth, there should be a chief gas analyst who should direct the operations of the assistant gas analysts, and he should receive daily the returns of the examinations of the assistant analysts, and submit them, and report on them weekly to the local authority.

1481. *Chairman.*] Have you any assistant now?—Yes, the Corporation allow me an assistant, because the assistant lives at the laboratory, and makes experiments during the whole of the evening; the experiments are made as they are not made anywhere else; they are made three times in the evening, as they are made in Paris; ninthly, the local authority should be the Metropolitan Board of Works outside the City, and the Commissioners of Sewers inside the boundaries of the City.

1482. Mr. *Dutton.*] Instead of the local members?—Just so. The local authorities at the present time are the vestries. Some appoint and some do not. Some throw the responsibility upon some inferior officer, others put it on the medical officers, who tell them plainly that they know nothing of the principles of testing gas; and some do not make any appointment at all; therefore, it should rest with the Metropolitan Board of Works to receive weekly returns. The 10th is, that Gas Companies should be allowed to send an officer to each of the testing places to witness the testing, but he should not be allowed to interfere with the operations, though he should be allowed to report to his Board. Lastly, the local authority should have a speedy and certain means of proceeding before a justice or magistrate, and for enforcing penalties in case of any defect in the quality or illuminating power of the gas. At the present time there is no speedy and easy mode of going to the magistrate. Applying to the Secretary of State involves the necessity, as I know in one instance where the Secretary of State has referred the matter to me for inquiry, of my giving a clear day's notice, which may alter the entire condition of things. The delay and expense of such an investigation make it unsuited to the public. With a thing of such common necessity as gas, the quality of it should be speedily arrived at, so that any defect should be speedily remedied.

1483. *Chairman.*] Will you allow me to ask you (it is a material question to this Committee) whether you see any objection to the present system of the metropolis being divided into districts for service by various Gas Companies?—No; on the contrary, I think it is one of the best things. Competition is well enough in its way, but there is the public convenience to be considered in this case in regard to the breaking up of streets, which is constantly taking place wherever competition takes place in a locality. A customer may change from week to week, because he is dissatisfied with his gas. A well-regulated monopoly is better than any competition of that sort.

1484. But you have not found the regulations under which the monopoly now exists sufficient for the protection of the public?—That is so; it is not a well-regulated monopoly at the present moment.

1485. But you know it may be amended to that extent to make it work well?—I am sure of it.

1486. Under the suggestions you have made to this Committee?—Yes.

1487. We have a Bill before us for the City alone; how would that become operative with regard to the districts; would it take away the supply of gas to the City by those Companies which now supply it?—I am placed in a difficult position by answering that question; I start with the general proposition, and there is no doubt about it, that for the supply of gas, considering the public inconvenience involved in the breaking up of streets, a well-regulated monopoly is the best.

1488. You think it is quite possible to have such an Act passed that it would be well regulated?—The monopoly of Paris is a monopoly in which one Company has the entire hold of it; there is no dispute, for the simple reason that the regulations are so admirably adapted.

1489. Mr. Alderman *Lusk.*] I assume that the present state of things is a great monopoly?—And a bad monopoly.

1490. You admit that it is a great monopoly?—I do.

1491. Then you admit that the present monopoly is a bad monopoly?—Yes.

1492. That the laws and regulations are unsuited to give justice to the public; that is what you mean?—That is what I mean.

1493. In point of applying to magistrates as to examinations; indeed, in every

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respect?—In every respect as regards the quality of the gas supplied to the public, the chemical quality and illuminating power, it is as bad a monopoly as it is possible to be.

1494. You have no fault to find with the districting at all?—Not at all.

1495. You think that by proper regulations, that is the sum and substance of your evidence, we might make the present state of things very comfortable to all concerned?—I think so.

1496. If we adopted the usual precautions?—It is a matter of economy as well as a matter of interest to the public, because, wherever there are two sets of working operations, it must be more expensive than one.

1497. You were speaking about a monopoly, that always involves a question of price; might I ask you what you think about that question of price?—I think the price must not be reduced very much in London, because, if the Companies are to be compelled to adopt the system of purification which I have suggested, and which they have found to be so advantageous, it is costly. I think 4*s.* per thousand would be a very fair price, but the price will be better regulated by the dividend.

1498. You think districting very desirable, and do you think, all things considered, the price might be reasonably arranged as well?—The price will be better regulated by the dividend. As soon as the dividends come up to a certain sum the price must be reduced. The balance is there. With regard to the price at the present moment, the price fixed at this moment may be unfair to all parties in the course of a half-a-dozen years.

1499. Mr. *Dutton.*] I have only one question to ask, as regards the price. I wanted to ask what additional price would be put upon gas, or what would be the cost if lime were used as well as oxide of iron?—The cost is not so much with regard to the cost of lime, because I believe that a ton of lime used with oxide of iron would purify, at least, the gas of 20 tons of coal. That is therefore a matter of very little moment with regard to the price of lime, but the cost would be in the increased area of the works in order to put up a double set of purifiers. That is an engineering question upon which I cannot give an opinion.

Cross-examined by Mr. *Richards.*

1500. I would ask you one question. Something has been said about the Paris gas; are you aware that the price of the Paris gas is eight francs per thousand feet?—I think it is somewhere thereabouts.

1501. Eight francs; that is 6*s.* 8*d.* in our money?—You must allow me, in speaking of that, to give an explanation. At the termination of the monopoly, the whole of the pipes of the Company are the property of the municipality; therefore the price is now being paid for the buying up of the works, so to speak.

1502. Have they a very long concession?—Fifty-one years, but much of it is expired.

1503. I will ask you one question with regard to the mode of testing the gas. Does it strike you that it would be fair that the Company should stand by and see the gas tested without any means whatever of taking an objection to the mode under any possible circumstances?—It does, and here is the French account of it. There is a special provision in the Paris decree or regulation, to the effect that the Companies may send a tester, but he must not interfere with the testing. You never can get at a result at all if two people are quarrelling over the testing. Let them report, if they like. They can report; the tester may report.

1504. What I am to understand, then, is that they are to report to their Company, but are they to have no sort of means of raising the fair question or of appealing to anybody?—No, the mode of proceeding is this; that the officer sent by the Companies to witness the testing at the appointed time and at the appointed place may report to the Company what he considers to be wrong in the testing, and the Company would at once report to the local authority. There the matter would be settled.

1505. Pardon me, they are to report to the local authority, but not to object to

to the decision at which the officer appointed by the local authority has arrived?—Just so.

1506. If they reported to the local authority, what chance would they have of being listened to by the local authority?—Oh, yes, they would.

1507, Do not you think that would be putting rather an arbitrary power in the hands of the officer appointed by the local authority?—No, I do not.

1508. It makes him absolutely master of the position?—If it rested with the officer appointed by the local authority and the officer appointed by the Company, do you think they would ever come to any conclusion upon the matter?

1509. Do not you think it would be fairer to refer to some person as arbitrator between them when they differ?—You may do that if you like. It is not to be as it now is; disputes may arise about the sort of candles used, whether they contain paraffin or not. The paraffin will raise the illuminating power of a candle in the proportion of 22 per cent. over that of sperm. Disputes may arise when a candle contains wax, which is one of the things that they are adulterating sperm with, and wax will lower the illuminating power 14 per cent. Then disputes may arise about the time the burner has been going; disputes about the mode of making the experiment. All these may, at the present moment, arise between two parties; but if it be, as I have contemplated, fixed by the Act of Parliament how an experiment is to be made, how can a dispute arise?

1510. Does not that all show that the experiment requires considerable skill, and considerable nicety in its adjustment?—It does not. The officers that are appointed in Paris to make the examinations are clerks of the municipality, who get about three francs, or half-a-crown, for making the experiment. They can teach one to make the experiment accurately in a quarter of an hour. It is a very difficult thing when you put a photometer before a man who knows nothing about it, and has no cause to make the experiment; but it is not at all difficult, and no dispute can arise when it is once understood.

1511. *Chairman.*]. Allow me to ask a question just to clear this matter; do you propose these street regulations for testing the quality of the gas in the interest of the public as against the monopoly given to Gas Companies over certain districts?—Precisely.

1512. That is the reason you recommend these stringent powers?—Yes, the Gas Companies having the monopoly of supply, the public should be in every possible manner protected against the abuse of that monopoly.

1513. Mr. *Richards.*] Thoroughly admitting that principle, still I ask you, do you think it fair that the officer appointed by the local authority should be left absolutely master of the position, without any sort of appeal even to the chief analyst?—I do not say that, I say this; this is the origin of the question, "Is the officer appointed by the Company to interfere with the investigation"? he is not; he may make a note of what he sees wrong, and report to his Board upon it, and the Board may report to the chief analyst, or to the local authority, or to anybody else who may be able to arrive at a correct conclusion, but, I say, he must not interfere; if two officers are quarrelling over a photometer, it would never be done at all.

1514. Then if he saw something objectionable, you would not allow him to point out the objection?—He should have no legal right to do it; I would not have an officer interfere with the mode of testing.

1515. But he is at liberty to mention it to the local authorities?—He is at liberty to report it to his Board, and the Board to the local authority.

1516. To the local authority, who will know nothing about the matter?—The chief analyst or the examiner-in-chief would settle the question.

1517. Then, under those circumstances, the report having been made to the local authority, which is the vestry, who are totally ignorant of the matter, don't you think it fair that the chief analyst should then be the referee between the disputants?—That would be so, as a matter of course.

1518. Very good; now allow me to ask you, would you not also think it fair that if the officer attending on behalf of the Company had grounds to be dissatisfied, you should not allow him to conduct an experiment with the same machinery immediately afterwards, in order to confirm his own impressions?—No; I tell you what may be done as it is done in Paris; companies have the right to make tests at their several stations. If discrepancies arise between the results of testing experiments at their own stations and the testings at the places

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appointed by the local authorities, then the dispute may be settled by reference to the chief examiner to ascertain whether anything erroneous either on one side or the other has occurred.

1519. Then you would not even allow him to make experiments afterwards? —You see a sub-officer should have but one and a straightforward duty to perform, to make the experiment. It should be the same duty, moreover, of that officer who witnesses the experiment, and in case of a dispute it should be referred to the chief analyst or to the local authority.

1520. Now, Dr. Letheby, really, with every desire to meet you, does not it strike you that circumstances may arise under which the officer of the Company may, by making an experiment, find out that an objection which had arisen in his mind was really removable, and it was desirable therefore that he should have an opportunity of testing the apparatus immediately after the man who has tested it on behalf of the local authority?—I apprehend that when the two officers meet there would not be that sort of antagonism that you are speaking of. It might be said by the officer of the Company, "We don't do that at our works in that way." The other would listen to it, and there should be a settlement of the question there.

1521. One other question I would ask you; I suppose your plan would be to take care that these requirements are fulfilled under some form of penalty?—Yes.

1522. Now, let me ask you, would you recommend that one single deviation should subject the Company to a penalty? – No.

1523. I expected that, from your character, you would rather, I apprehend, make the penalties imposable after a certain number of experiments?—Yes, it should run through the whole evening, and with regard to sulphur, it should last a couple of days, except in the case of sulphuretted hydrogen; sulphuretted hydrogen ought not to be there at all.

1524. If we always had you to deal with, there might be no difficulty in the matter, but sometimes we meet with people who are not so competent to analyse gas; now, there is one question with regard to pressure; I apprehend you would not recommend that any minimum pressure should be fixed in the Bill?—No; I said that at the time I gave my evidence on the Gas Bill of 1860, during the day time the Gas Companies if they are compelled to put the gas on at a high pressure, are loosing enormously from the leakage; the leakage at the present time is 20 per cent. of the gas made.

1525. *Chairman.*] When you are speaking of leakage, you are speaking of leakage from pipes in the streets?—Of leakage from pipes in the streets.

1526. To the great detriment of the public in spoiling their water?—Sometimes it does get into the water, but the most mischievous part of it is, that it makes the soil offensive; next, it gets into the sewers, and the men are very much afraid when they are in the sewers, of explosions; in the next place, it creeps into the neighbouring houses.

1527. Mr. *Woods.*] The answer you gave just now is rather mysterious to me. How is it that gas, which is under so very small a pressure, cannot be contained in pipes, when water, which is of so enormous a pressure, can. I daresay there is a good reason for it; I should like you to give it? —In the first place, it requires very much more pressure for water to pass through an aperture of a given size than it does for gas; very much greater pressure. In the next place, water within the water-pipes, to a certain extent, gives frigidity and strength to the pipes, and they do not give way in the streets to the extent that gas-pipes do. A small fissure, not a breaking, between the junction of one pipe with another, would, in the case of water, let nothing out; but, in the case of gas, it would let a good deal out. Practically, 20 per cent. of the gas made in London is either lost by being taken improperly, or leakage.

1528. Is it fair to assume that gas-pipes cannot be made to contain gas? —I am sure that gas-pipes can be made to contain gas, because there are cases where bore-sockets have been used; but London is being so perpetually disturbed, from the opening of the streets, that the best made gas-pipes in the world must give way. There is a good deal of settlement in one place and another.

1529. *Chairman.*] But if you describe it to the Committee as a loss of 20 per

per cent., that loss of 20 per cent. falls on the Companies, and not upon the consumers; consequently, it is the interest of the Companies to avoid that leakage?— Quite so.

1530. Mr. *Richards.*] I think the use of the word leakage, in the gas world, has a much larger meaning than what oozes through the pipes?—Quite so.

1531. Leakage means the difference between the gas that is made and the gas that is paid for; that includes all gas that is used in the houses of the inspectors of gas burnt upon the premises, as well as all gas that leaks through the pipes; it is a cant phrase, and should be, "unaccounted-for gas"?—Yes.

1532. Mr. *Dutton.*] You find the meter adjusts that in the interests of the Company?—I do not know what you mean.

1533. It recently occurred to my own meter: it ran through three or four times the consumption, and I only found it out by its registering such a preposterous quantity?—There is a provision in Lord Redesdale's Act with regard to meters which guards against that. Formerly, when the public were obliged to receive the meter from the Company, no doubt there were cases where the meters registered wrongly against the Company, and often against the consumer.

1534. Mr. *Webster.*] I should like to put another question with reference to the one just put by the Chairman. You were asked whether the 20 per cent. did not fall on the Company. I would ask you, whether, seeing that the Companies have a guaranteed dividend on which the price is to fall, the real loss does not ultimately fall on the consumer?—The Gas Companies are not philanthropists; they do not supply gas to the public for nothing; they gain money by it, and, therefore, in the end there is no doubt the public have to pay that 20 per cent.

1535. In the end the public pay for it?—No doubt.

1536. Mr. *Richards.*] I suppose, in the end, the public pay for everything?—Pretty nearly; they pay for bad debts in the long run.

1537. I want to ask you a question. I understand you to suggest 14 candles as the proper standard. I wish to know whether, in order to produce 14 candle gas, under penalties, as you have it prescribed in the Act of Parliament, it is not necessary to produce something like 16 candles?—No.

1538. Fifteen?—Fifteen.

1539. One candle over. Am I right in saying that 15 candle gas, which your 14 candle standard would require, is a higher illuminating power than can be obtained from Newcastle coal?—No; I will give you an example. I have for two years past been examining the manufacture of gas at Hastings; they do not use a bit of cannel; or, at least, they did not during the time I was there. They are working with Newcastle coal; and they are producing at the very end of St. Leonard's 14 candle gas; therefore, there is an answer to the question; they are really doing it. Now, I will take the case of Birmingham as another instance. The Works at Birmingham, the West Bromwich Works, are six miles from the town of Birmingham; they do not use a bit of cannel, they are using Staveley coal. Nevertheless, the gas in Birmingham is 14½ candles.

1540. That is not Newcastle coal?—No, that is Derbyshire coal.

1541. The St. Leonard's coal you say was Newcastle?—That was.

1542. Do you know at what price per ton?—I cannot tell you that.

1543. Do you know what is the quantity of gas produced per ton?—I did make a note of that; they get about 9,500 or 9,600 feet of gas per ton of coals.

1544. I think I am right in saying that you may get a limited quantity of very rich gas, whereas if you get an average quantity of gas, you may do it by deterioration of the gas?—No; at the present time at Hastings they are under every possible difficulty with regard to the manufacture of gas. They have no harbour there, and they are obliged to pay enormously for coal to be landed on their beach. I do not believe they get coal under 15*s.* or 16*s.* a ton. In the next place, they have no means of getting rid of coke. Therefore, they are obliged to produce as large a quantity of gas as they can from a ton of coal; and they are getting 9,500 feet per ton, and they are selling the gas at Hastings for 3*s.* per thousand.

1545. Mr. *Sargood.*] When did Hastings get their Act—They came to Parliament last year for new powers.

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1546. Mr. *Richards.*] One question with reference to the burner; you propose to define the burner accurately?—Yes, I would.

1547. Do you think it fair, or do you not, that the testing burner should be that burner which gives the best character to the gas?—Undoubtedly.

1548. You would not recommend that an inferior burner should be used, because it was in operation a certain definite time ago?—No; I recommend that the best burner that is known for the production of the most light from gas, because burners do not make light, they simply educe it; it is not fair to use a burner that is leaky; we have arrived, by experimental investigation, at the knowledge of the best burner, and, as we are going to start fresh upon this matter, I should say the burner should be defined as the best burner now existing that will evoke the light.

1549. You may use a burner of such a construction that it would destroy gas?—Where would be the use of that? If one kind of burner may be used by one tester, and another by another, we should always be having quarrels; we must fix upon the burner once for all.

1550. Unless you have the best, where are you to draw the line?—The best must be decided to-day, it must not be left to to-morrow.

1551. Mr. *Hartley.*] You would have a model burner?—Yes, and it should be deposited with the town-clerk of the City of London, and with the chief-clerk of the Metropolitan Board; the model burner at Birmingham is deposited with the town-clerk.

1552. *Chairman.*] It could be deposited in any other place?—Or in any other place.

1553. You mean the model burner at Birmingham was one used in conformity with their own Act?—No; at the time the Act of Parliament of 1864 was passed, the Birmingham and Staffordshire Gas Act, the late Lord Donoughmore insisted upon a proper definition of a burner; I made a definition of a burner, and that burner is not only defined in this measurement in the Act of Parliament, but the model is with the town-clerk of Birmingham.

1554. Is there any difference between that model burner and the one in use in London?—The model burner has a steel ring which I think is objectionable; steel corrodes, and the holes in the burner come to vary in size, and the quality of light necessarily varies; the stealite burner, such as you see on that table, endures; it does not undergo any change in the holes.

1555. Is it metal?—No, it is filled internally with hard-baked stealite, a kind of clay, in which the holes are drilled; hard baked stealite is very enduring, and resists the action of heat, so that the holes remain uninjured, and give a light that never varies.

1556. Mr. *Woods.*] You mean the model burner is one that is to be kept in perpetuity, and used only to compare with burners actually in use?—Yes, in case of any dispute.

1557 *Chairman.*] Is this burner here cased with the same metal internally as well as externally?—It is cased with stealite; this stealite is baked so hard that it cannot be drilled even.

1558. But it is drilled?—It is drilled before it is baked.

1559. Mr. *Woods.*] You deposit the burner to prevent any change in the burner, at a future time, in the manner you have complained of, that the burner has been changed in London?—Just so; also in case of dispute in regard to the illuminating power, the public a swell as the Company should have the opportunity of knowing whether the burner has been changed.

1560. Mr. *Hartley.*] Exactly the same as with standard weights and measures?—Precisely.

1561. Mr. *Richards.*] I am told the price is 4*s.* at Hastings?—I believe it is 3*s.*; I was told so last winter.

1562. Mr. Barlow tells me it is 4*s.*?—If Mr. Barlow says it is 4*s.* at Hastings, I will take it from him, but I was three weeks there and the secretary or manager told me it was 3*s.*

1563. Mr. Alderman *Lusk.*] Speaking about pipes a little while ago, you said there was a leakage of 20 per cent.?—There is a loss of 20 per cent. between the gas made by the Company and the gas paid for by the consumer.

1564. And the public have to pay for that in the end?—Yes.

1565. Does

1565. Does that leakage arise from the Company not using sufficient precautions in laying the pipes, or is it inevitable?—It may partly arise in that way, but I think, as a rule, the Companies look to the leakage as a part of their interest, and they put pipes down in such a manner as to guard as much as possible against leakage.

1566. You can never reduce the price of gas if there is leakage?—But the Companies do this; they take care to avoid leakage, because if a leakage takes place and the gas gets into the neighbouring house and an explosion takes place, the Company have to pay the cost of that; 40,000 *l.* was paid for the explosion in Wood-street.

1567. Do you think 20 per cent. an excessive loss?—It is a large proportion.

1568. Is it excessive?—It does look to me excessive.

1569. Speaking about burners, were you referring to the old burner or the new standard burner?—There never was a standard burner.

1570. Would you insist upon a standard burner?—Precisely so.

1571. The same as standard weights and measures?—Precisely so; there never was a standard burner until the Birmingham Act.

1572. *Chairman.*] And that you would recommend?—I will look at that again; at present we are going into the measurements.

1573. Mr. Sergeant *Kinglake.*] You stated just now very clearly the process by which you would test gas, and there would be a report given by the examiner, you said to the local authorities; you then went on to suggest that you might have an easy mode of applying to the magistrate, if anybody should be dissatisfied?—Yes.

1574. What I wanted to ask you was this; would you make that report conclusive before the magistrate, unless it has been disputed by the Company, and been referred to the analyst?—The Company should certainly have the opportunity of inquiring into the truthfulness of the results obtained; no doubt of that; but at the same time, seeing that the examinations are to take place every night between a certain hour, I think the result of the examinations of that night, unless the Companies can show that there has been some error in the mode of making the examinations, should be regarded as conclusive.

1575. As between the applicant and the Company?—And the Company; that is so in the present Act of Parliament, that any consumer can apply, upon paying 10 *s.* 6 *d.* to the analyst, to have the gas analysed, and that report is taken before the magistrate as conclusive evidence.

1576. Mr. *Staniland.*] That is not quite clear?—I think it is so in the Act of Parliament, section 30.

1577. Mr. Sergeant *Kinglake.*] "Each party shall thereupon appear and may be heard before the magistrate, by themselves, their counsel, attorneys, or agents"; what I want to know is, whether you make that report conclusive as between any consumer of gas and the Company summoned before the magistrate?—Yes; I think that must be so. If the mode of investigation was left open at the discretion of the experimenter, then I think it necessary that there should be an investigation of the manner in which the experiment was made; but if Parliament is to define precisely the process of the inquiry, the result of that inquiry must be taken as conclusive of the experiment at that place.

1578. Mr. *Dutton.*] Have you had any complaints made to you of the effect the gas has had upon the goods in tradesmen's shops, on account of its bad quality?—Oh, yes.

1579. There was a gentleman here the other day who brought a pair of boots to show the effect it had upon leather?—I saw a pair of boots of Mr. Medwin's, and I had a piece of the leather sent to me.

1580. Do you think gas would have that effect upon it?—I am sure of it; I found in the leather boots that Mr. Medwin sent me, as much as ten grains of oil of vitriol in two inches of the leather.

1581. Mr. *Hartley.*] Would that be imbibed from the gas, or could it not be in the original making of the leather?—No, because I have this instance, which was brought forward at the time of the inquiry of 1860; I found that books in libraries that had been bound at the same time, one taken out and kept by the reader a considerable time, was brought back again and put by the side of the other volume that had rested on the shelf; that in the hand of the reader was

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sound, but that standing on the book shelf where the gas was burning was rotten, and therefore there could be no doubt about that; primarily the same quality of material was used.

1582. Mr. *Woods.*] I suppose for the purpose of a fair hearing before the justice that the Company, although you would prohibit them from meddling with the investigation, could, if they liked, set up a testing apparatus next door?—No doubt of that; they might do what they liked in that respect.

1583. Mr. *Dutton.*] That you stated is the case in Paris?—In Paris they can have testing places at the works.

1584. Mr. *Woods.*] Seeing that the metropolis is districted, and that the consumer has practically no appeal, you wish a public testing officer to be appointed to make reports, as a counterpart to the absolute monopoly which is created by the Act?—That is so.

1585. Mr. *Staniland.*] You propose that one experiment should not be decisive against the Company?—I do.

1586. The way Sergeant Kinglake put it to you led the Committee to understand that you would have the Company convicted by the magistrate upon that one experiment, this is not what you propose?—No.

1587. You propose a series of experiments, extending over a certain time, before the conviction takes place?—Yes.

1588. Mr. *Hartley.*] Not for days, but for hours?—With regard to the illuminating power, I mean that all experiments made during the whole evening shall be taken as evidence of the condition of the gas at that time; the Companies in their own interest will take care that their officers shall be present to witness the test; but with regard to sulphur, as an accident may happen over which the Company may have no control, I should not proceed against them, unless for two consecutive days it was found that the sulphur was excessive; or, unless during the period of a week, it should be found to be excessive.

1589. Mr. *Richards.*] I would ask whether dry meters are not made of leather?—Yes; but the sulphur, then, is not in the form that is capable of acting upon leather; it is when it is burned that it produces the mischief, after it has passed through the burner and is given off into the atmosphere.

1590. Mr. *Staniland.*] You are aware of a great outcry by people, perhaps who are ignorant of the matter, against monopoly, especially in reference to gas in London; notwithstanding all that, are you satisfied that in the interest of the consumer, it is desirable that the districting should remain subject to the conditions which you propose to impose upon the Companies?—Yes.

1591. You are quite satisfied upon that point?—I am.

1592. It admits of no doubt in your mind?—Not at all.

1593. Let me ask, has it not been one of the consequences of this monopoly that every Company, without exception, in London, mentioned in that Bill, have reduced the price of gas 6*d.* per thousand?—Yes, they have; but they have only brought it down to the old price, to the price at which it was before the Act of 1860; and they have given a worse article.

1594. But it is the fact that they reduced the price 6*d.* prior to the time of passing of the Act?—It is only now what it was before.

1595. Are you aware that the cost to the public lights has been reduced too?—No; on the contrary. I have not my book with me; but the engineer to the Commission has tabulated the price paid by the Commissioners of Sewers for public lights; and they are paying to the public lights at the present time considerably more than they paid when gas was 7*s.* or 8*s.* per thousand.

1596. With reference to Paris, I was going to ask, Dr. Letheby, is it not very much better lighted than London?—Oh, yes, very much better.

1597. *Chairman.*] Will you state whether it is English coal that they make gas from there?—No; for the most part it is Belgian coal.

1598. Mr. *Staniland.*] Is it not that there are a larger number of lamps in the streets?—Yes, that is it. The municipality of Paris are very liberal in that respect.

1599. Mr. *Woods.*] Will you direct your attention to section 11 of the Metropolis Gas Act. The section says: "After the receipt of such notice the Company shall, and they are hereby required, within a reasonable time, to remove the grounds of such complaint." Is there any means of compelling them to do that?—Except by application to the Secretary of State, there is not.

1600. Is

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1600. Is there anything prescribed as to how the Secretary of State is to compel them?—Yes, that is prescribed in the section.

1601. I do not find any means in the Act to compel them?—It is a very round about way of doing it. I have been engaged, in one instance, where the Secretary of State has been complained to.

1602. *Chairman.*] Has not that clause been perfectly inoperative?—It has.

1603. Mr. *Woods.*] Do you think the Secretary of State can be brought to make such an order, that "a penalty not exceeding 50 *l.*" will ever be inflicted upon a Company?—I think not.

Dr. *Andrew White Barclay*, called in; and Examined by Mr. *Hoggins.*

Dr. *A. W. Barclay.*

1604. You live in Bruton-street, Bruton-square?—Yes.

1605. Are you a chemical examiner of gas for St. Luke's, Chelsea?—Yes.

1606. And a fellow of the College of Physicians?—Yes.

1607. You were appointed examiner of gas in 1852?—Yes.

1608. Did the vestry fit up a testing-room at the vestry hall?—They did.

1609. And they did that according to somebody's plan. Whose plan was it?—Sugg's plan. He was the gas engineer who fitted up the apparatus with his burner, such as Dr. Letheby had prescribed.

1610. His new burner?—Yes.

1611. Have you made any experiments since your appointment?—Constantly.

1612. Mr. Serjeant *Kinglake.*] What Company is it?—The London; but I may say, in reply to that question, that for two months last year we were supplied by the Imperial, in consequence of the explosion of the London Gas-works.

1613. *Chairman.*] You are stating from your own experience of the different Companies you have tested?—Yes.

1614. Mr. *Hoggins.*] Will you have the goodness to state the result of your experiments as to the illuminating power?—The result has been that almost invariably it has been over the standard of 12 candles, as tested with the new improved burner.

1615. Did you say you had found an excess of sulphur?—I have.

1616. And the combustion of sulphur, producing sulphurous acid, is prejudicial to health?—In my opinion it is so, and to goods too.

1617. Is the present standard as to the illuminating power, when tested with Sugg's burner, too low or too high?—Too low, decidedly.

1618. Have you known the gas to exceed 12 candles?—Oh, yes, very considerably; and I should say that the average was decidedly over 12 candles—in fact, over 13 candles. The average of the present year, up to this date, has been $14\frac{9}{10}$.

1619. Whilst that has been the case, have you heard complaints?—Not this year.

1620. Did you hear complaints before?—I have heard complaints before, especially about last Christmas-time; and then I find the average was, for the month of January, 13 candles, and yet complaints were very loud and numerous. Since then the illuminating power has increased. I was first appointed. The average for the first three months that I tested it was only $12\frac{1}{2}$ candles with the new burner, which, of course, was below 12 candles with the old burner.

1621. Have you had complaints from consumers?—Frequently.

1622. About for how long a period of time?—I think most prominently in November, December, and January, 1864 and 1865; that is to say about 15 months ago.

1623. What was the illuminating power?—When I have been able to ascertain it, I have always found that on occasions on which complaints have been made the standard has been over 12 candles, but under 13.

1624. Would it have been the same, or below that standard, with the old burner?—It would have been below it, I believe.

1625. Now, with regard to the London Gas Company, I think you have had some opportunities of investigating their gas; can you tell me as regards their pressure, has it been regular or irregular?—I think it has been irregular generally; I reported upon that subject to the vestry some time ago, and since then the pressure has been more equal; my attention was first called to it by finding

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finding that the pressure of the Imperial Company was much more uniform than that of the London, and when I called attention to it the London regulated their pressure more equally.

1626. I suppose you complained to the vestry?—I did.

1627. And the vestry complained to this Company?—I think they did; I cannot be certain as to that fact.

1628. Has your attention been called to the section of the Act of Parliament of the Metropolis Gas Act, sections 27, 28, and 29?—Yes.

1629. Have you found them of any use at all?—I think practically they render the Gas Act utterly inoperative, because there are two sets of apparatus provided for, and it is left quite an open question where the examination is to take place, and which set of apparatus is to be used as evidence.

1630. There are two sets of apparatus; is there no specification as to which shall be used?—No.

1631. Do you infer the Company's apparatus is to be used?—I rather expect it is.

1632. Does it require 24 hours at least to test the purity?—For sulphur, it requires 24 hours' continued test, and three hours' notice to be given. That is so by the law.

1633. Is there ample time for providing good gas, supposing the officer was minded so to do?—I should think there was; if the officer was minded to provide pure gas he could do so when he knew that the operation was going on.

Cross-examined by Mr. *Phinn.*

1634. I have one question to ask you on behalf of the Metropolitan Board of Works. Are you aware of section 7 of the Metropolis Gas Act of 1860, by which memorials may be addressed to the Secretary of State by the Metropolitan Board of Works, or by any vestry or district Board of Works, complaining of the quantity or quality of the gas supplied by any Company?—I am aware of it.

1635. Are you aware whether any such memorial, with reference to any Gas Company, have been addressed to the Metropolitan Board for presentation to the Secretary of State, or direct to the Secretary of State?—I should think it would be perfectly useless.

1636. Are you aware whether, in fact, such a memorial has been presented?—I am not aware that such a memorial has been presented.

Cross-examined by Mr. *Davison.*

1637. At the time you speak of, when the pressure of the London gas was especially uneven, was that after the accident?—It was before that.

1638. When you spoke of the pressure of the Imperial Gas Company as being more even, was that at the same time?—That was at the time that Chelsea was supplied by the Imperial Company, in consequence of the London not being able to supply all their district.

1639. That was after the accident?—After the accident.

1640. Do you happen to know that it was supplied by several Companies, and not exclusively by the Imperial?—I am not aware as to the circumstances; I merely mean to state that the pressure was much more equal during those two months than it was before.

1641. Of the gas so supplied after the accident, the pressure was more even than that which the London had supplied before the accident?—Decidedly.

1642. Now, about these clauses being in operation; have you ever had occasion to attempt to put them in force?—I think practically, I have not attempted to put them in force.

1643. By practically, I assume you mean they were inoperative; therefore you attempted to do nothing under them?—I certainly should not have advised the vestry to do anything under them.

1644. Now then, about the notice, the three hours' notice you have spoken of; in point of practice, cannot you go to the Gas Companies' premises, without giving any notice at all?—Yes, certainly; they have given me that permission very cordially.

1645. Has it been uniformly the practice of the Companies to allow you to go without

without any notice at all?—I have no knowledge of any other Company except the London, in that respect.

1646. So far as the London are concerned, have you been uniformly allowed to go and test the gas without any notice having been given to them?—Yes.

1647. *Chairman.*] I think we may close Dr. Barclay's evidence, by asking him whether he was in the room when Dr. Letheby was under examination?—I was, almost all the time.

1648. Did you hear his recommendation to this Committee?—Yes.

1649. Do you concur with the opinions he has expressed as to the mode in which the operations of the Gas Act would be more beneficial to the public?—They are so new to me that I am not prepared to give an opinion.

1650. The whole of the opinions that you speak of as given by Dr. Letheby are new to you?—Yes, such as appointing one general analyst for London, and a subordinate under him, and the position of the testing places, I could not give an opinion without going into the matter more carefully.

1651. You decline to give an opinion in conformity with that given by Dr. Letheby?—Yes; I am not prepared, but I do not oppose it at all.

1652. You have not sufficiently considered the subject?—I have not.

1653. Do you wish to make any further suggestion to the Committee for the improvement of the Gas Act?—No, I think not.

1654. Mr. Alderman *Lusk.*] In speaking about the burner, do you think there should be one standard burner for all London?—Certainly.

1655. You are not satisfied with the present state of things?—Certainly not.

1656. Do you think the present Act to be inoperative?—I believe so; almost entirely, excepting so far as moral force is brought to bear upon the Companies.

1657. We will not speak of moral force, but practically looking to the people who consume the gas, do you think it is a workable Act?—Practically, as a legal question, I think it is quite unworkable.

1658. That is, the people will not take the trouble and expense to put it in operation?—People will not take the trouble and expense when they feel certain they will be floored.

Dr. *Charles James Berridge Aldis* was called in; and, having been sworn, was Examined by Mr. *Sargood.*

1659. You are a physician residing in Chester-terrace, Chester-square?—Yes.

1660. Are you gas examiner for the parish of St. George's, Hanover-square?—Yes; I am the medical officer of health.

1661. Were you appointed gas examiner in February 1861?—I was.

1662. What are the names of the Companies whose gas you have to examine under that office?—The London, the Equitable, and the Chartered; the Imperial supplies only two lamps.

1663. Where is the testing place in London?—At 73, Besborough-street.

1664. With regard to the illuminating power, what has been the result of your experiments upon the gas there?—It has been generally above the standard required by the Act of Parliament

1665. And has the testing been taken with what we have called the new burner or the old burner?—With the new burner; Sugg's burner.

1666. If the test had been taken with the old burner, would it have been up to the Parliamentary standard?—I think generally it would; I tested it on three hours' notice, according to the Act.

1667. You tested by the new burner?—Generally speaking by the new burner; sometimes it was up considerably, sometimes it reached 25 or 26 candles with the cannel, and I think it would be 14 candles with the common gas: for the quarter the average was about 14 candles with the common gas.

1668. With regard to the purity of the gas, have you had occasion to test that in the statutable manner or not?—Not since my new appointment; I was gas examiner to examine the cannel gas of the London Company two or three years before the passing of the Act in 1860, but I have not tested it for sulphur; since then I have had so much thrown upon me that I have not had the opportunity, because I have had no private room at present allowed me to which all the gases could be brought; the vestry allowed me a private room previously for

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testing the gas of the London Company, but now it is impossible to get a room in the district to which all the gases could be brought; at least, so I am led to suppose by the Companies since the districting.

1669. Then you have not had an opportunity of testing it for sulphur?—I have not.

1670. With regard to the Chartered, where is the place situated for testing that Company's gas?—In new rooms, situated at 40, Parliament-street.

1671. Do you there test by the new burner?—I test by the new burner for the common gas, and a back swing for the cannel. I test two gases for each Company; I test altogether six gases,—two for each Company.

1672. The new burner would not be suitable for the cannel gas?—No.

1673. Therefore we will take the question of the new burner as applied to common gas. What has been the result of your test of the illuminating power of the Chartered?—It has been very favourable; it has been above the standard, as a rule. Sometimes it is below the standard, but seldom; but, as a rule, at the end of the quarter I find the average is above the standard required by the Act.

1674. But in that case, I presume, it would not have reached so high a standard if tested by the old burner?—It is, sometimes. I have been looking over some of my reports, but certainly, from experiments which I have made with regard to the old iron burner and the new burner, I have found there was a difference of 1·85 candles. I made some special experiments with regard to the burner, which, if you will allow me, I will hand in. It was on the occasion of the Birmingham Gas Bill that I was engaged to make those experiments. I made some experiments between No. 1 burner, which is named the Birmingham burner; No. 2, which is Sugg's; and No. 3, which is the old iron burner. I found that the result was, that the No. 1, that is the Birmingham burner, as compared with No. 3, the difference between No. 1 and No. 3, which is the old iron burner, gave a difference of ·71 candles. The difference between No. 2, which is Sugg's burner, and No. 3, the old iron, gave a difference of 1·85 candles, or nearly two candles difference. The difference between No. 1, the Birmingham burner, and No. 1, Sugg's burner, gave a difference of 1·14 candles. I think the examination of the gas, so far as regards illuminating power, is favourable.

Vide Appendix.

1675. Then, if I understand you, the result of these experiments may be this; if the same gas passed through two extreme burners, it would show a difference in candle of 1·85?—Precisely.

1676. And that without altering the quality of the gas in the least degree?—Yes.

1677. Do you consider under those circumstances that the present mode of testing gas is a fair mode as against the consumer?—I think the Company has a right to do the best for its own gas, and the public can avail themselves of a new burner if they please; they may adopt the same plan as that adopted by the Companies.

1678. Perhaps you have not considered the subject whether the burner, which is applicable to the test under some conditions, is equally applicable to the consumer in all contingencies of ordinary use?—I think the consumer might use the same burner under all circumstances.

1679. Are you giving that merely as an opinion or as the result of test?—Merely as an opinion.

1680. There being this advantage in using that burner for the purpose of testing, are you aware that the public have availed themselves at all of the use of the burner for private consumption?—I do not know a single instance.

1681. Then there are difficulties attending ordinary and private use; you are not acquainted with them from experiments?—No.

1682. Now, we will come to the Equitable; where are the premises situated for the testing of the Equitable?—No. 75, Cambridge-street.

1683. I suppose they are made under the same conditions and with the same burner?—Yes.

1684. What has been the result of that experiment as to the illuminating power?—It has been favorable.

1685. Always subject to the same observation; has the new burner produced a more favorable light than the old one?—Yes.

1686. And that without altering the quality of the gas?—Yes.

1687. Have

1687. Have you had occasion to test the purity of the gas of the Equitable and Chartered, or has the same difficulty that you spoke of just now prevented that?—The same difficulty prevented it. I have tested with the paper for the sulphur and ammonia, and I have sometimes found the gas showed traces of ammonia.

1688. That being the ordinary test?—That by the ordinary test paper.

1689. Will you tell me this; has the three hours' notice been required by each of these Companies, or has it been dispensed with?—They would dispense with it, I think.

1690. I ask you, have they dispensed with it?—They have allowed me sometimes; generally they would allow me to go without notice; I believe I have been without it.

1691. But ordinarily you give it them?—Ordinarily I give it them. I was requested by the vestry, a few individuals of the vestry, to go and test the gas without notice, and I found no difficulty in doing so; the Companies have not shown any opposition at all.

1692. Have you access to the place of testing without communicating with the Company at all?—No; I think I could be allowed to go. Yes, I think they would allow me to go.

1693. That is not quite what I mean. I am not asking you whether they would allow you to go unattended, but whether you would have the power to enter the testing place and make experiments without communicating with them at all?—I believe I have.

1694. Then have you a key?—No; not a key.

1695. How, then, could you get in?—By application the key would be left there.

1696. Left where?—At the house, No. 78.

1697. Is there a resident there who takes care of the place?—Yes.

1698. Have you ever made experiments by walking in there without communicating with the Company?—No, I have not done that.

1699. Do you know any good reason why three hours' notice, or any notice should be given to a Company that you are going to see whether their gas is up to the mark?—I do not see any reason why; it is convenient in this way, that we are sure to meet with some one there who would assist us in the experiment and see that the apparatus is got ready; it is clear that the experiment could be made more accurately with two than with one person; that is the result of my experience; therefore for convenience it is desirable to have some person there to meet you to assist you or to take an assistant with you; I have not an assistant.

1700. When you get into the testing house, is the gas conveyed there in the ordinary way by a service pipe?—Yes.

1701. Have you any means of knowing from your own inspection from whence the gas comes which travels to that service pipe?—Not from personal inspection.

1702. You have no means of knowing that?—No.

1703. Have you ever in the case of either of those three Companies had occasion to investigate or take the trouble to investigate the progress of that pipe from the testing place to the works?—No, I have not.

1704. You have no personal knowledge of its origin or the source from which it obtains its gas to be tested?—No.

1705. The distance, I suppose, is the statutable distance of 1,000 yards?—It is about that distance.

1706. From your knowledge of gas have you any reason to suppose that it would not be equally fair to test it at a greater distance?—I think it might be equally fair.

1707. Equally fair to both parties to test it at a greater distance?—Equally fair to both parties to test it at a greater distance.

1708. In fact, if gas is well made, do you know any reason why it should not be tested at two or three miles distance?—I myself see no reason, but I have not made any experiment.

1709. But theoretically, you do not see any objection?—No, provided the distribution be properly made. In the present state of examining gas, I think it is very inconvenient, because we do not all test gas exactly in the same way. Our apparatus in some measure differs, and the mode of testing differs. In one

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case I understand the gas is supplied at a distance from the main by a very narrow pipe, and this, I might say, would deteriorate the illuminating power of the gas; then another tester uses one candle, another uses two candles, indeed there are many varying circumstances in operation during the examination of the gas by different classes of examiners which would lead to very different results.

1710. Then you would suggest, I presume, if there be any rule of testing at all, that, apart from its stringency, for the mere purpose of accuracy the rule ought to be better defined than it is?—Yes.

Cross-examined by Mr. *Davison.*

1711. So far as your own experience goes you have always had access immediately to the testing-house without any difficulty or notice?—I have had no difficulty.

1712. You have had no reason to inquire for the key, or to send any notice, but to go when you liked?—I should have to inquire for the key in the new room of the Chartered, but latterly, owing to the old room having been injured by a fire, I have gone to the works, and have had access at all times, and have had no difficulty whatever.

1713. Have you any reason to believe that there is a special tap kept for the supply of the testing house?—In my opinion, I believe there is no special tap.

1714. You have every reason to believe that it is the pipe supplied from the ordinary street main, such as consumers in their district burn in their own houses?—I believe so.

1715. I do not know whether you wish to appear on the notes, the paper which has been handed to me; but the result of it, I take to be, that the difference between a burner in the one case and in the other works out 1·85?—Yes.

1716. Now, here is another paper, if you will look at it; it is a copy of your return in the year 1861 to the London Company (*handing paper to Witness*), showing the illuminating power in common gas and cannel gas?

1717. Mr. *Sargood.*] First of all, Dr. Aldis, is that your return?—I am not aware that I made that return; I may have done so. I do not deny that I made the return. I make my return in quarterly returns.

1718. You see 31st March 1861?—Yes, for the quarter ending 31st March 1861. The return is for cannel 22·7, for common gas 14·59.

1719. That would in any other case be above the requirements of the Act?—Yes.

1720. The same with Equitable?—The Equitable was cannel 22·9 for the same quarter, common gas 15·36.

1721. Mr. Serjeant *Kinglake.*] You have spoken of the illuminating power of the London Company's gas; you did not tell us about the sulphur?—I have not had the means of testing for sulphur.

1722. Therefore you can form no opinion as to whether sulphur is in excess?—Not since the passing of the Act; I have had no opportunity of testing for sulphur since the passing of the Act.

Dr. *Septimus Gibbon* was called in; and Examined by Mr. *Webster.*

Dr. *S. Gibbon.*

1723. Do you reside in Finsbury-square?—I do.

The *Chairman* asked if the learned Counsel intended to call the medical officers of all the districts in London in connexion with the Gas Companies.

Mr *Webster* said he did not propose to call them all.

1724. What district do you represent?—The Holborn district.

1725. Where is the testing place that you have been in the habit of resorting to?—Besborough-street and Hatton Garden.

1726. Is that one in Hatton Garden, within the 1,000 yards of the Company's premises?—It is.

1727. Mr. Serjeant *Kingslake.*] What Company is it?—The City of London Gas Company.

1728. Mr. *Webster.*] Are both those places within the 1,000 yards?—I believe they are.

1729. Are they both recognised places?—They are fitted up by the Gas Companies.

1730. Mr. *Richards.*] It is the London Company, not the City of London Gas Company?—The London and the City.

1731. The testing house in Hatton Garden is not the City?—Their testing house was in Hatton Garden, but it has been removed.

1732. Mr. *Webster.*] Did you test both for pressure and illuminating power?—I have done so.

1733. At which place do you test for illuminating power?—I have tested at both places.

1734. Do the Companies require notice?—They do; they have notice.

1735. And have you been in the habit of giving them notice previous to their testing?—I have.

1736. Now, as regards the illuminating power, have you observed the illuminating power of the public lights?—I have.

1737. How have you found that to be?—As the night advances very low; the public lights in the streets.

1738. *Chairman.*] For illuminating power?—For illuminating power.

1739. Mr. *Webster.*] Can you name any particular occasion?—It is almost invariably during the autumn months, the dark months of the year, November and December every year, especially the London Gas Company's lights.

1740. Are you aware of repeated complaints by the consumers having been made to the Board?—I am.

1741. What has been the result?—The result has been that I have been sent to test it.

1742. What has been the nature of the complaints?—The nature of the complaints has been with reference to private houses and public lights.

1743. But were they with reference to quantity and quality, or one or both?—Quantity, quality, and impurity in one case.

1744. In consequence of these complaints, have you proceeded to test?—I have.

1745. With what result?—The result, always finding it above 12 candles, except in one instance.

1746. Do you conceive that the testing house, as at present arranged, provided by the Companies, are fair towards the consumers?—Certainly not.

1747. Will you state your reasons for that?—My reasons are, firstly, because the room is not a proper one, it is not a darkened room; I speak of the London Gas Company now; they have curtains which are drawn around the photometer, but the walls are not blackened; there is a large clock with a white face in the upper part of the room, which reflects a considerable amount of light.

1748. Is that a reflector?—It is.

1749. And is there a large reflector behind the light?—There was when I was last testing it.

1750. What is the effect of that upon the illuminating power?—Considerably to enhance it.

1751. Would the result there be to show a higher illuminating power in the testing place than a consumer would realise?—That is my opinion.

1752. Have you any objection to the present mode of testing, as regards the burners?—I think the minimum burner ought to be taken, rather than the one which gives the maximum amount of light, or an average one at all events.

1753. With whom does the choice of the burner rest?—Entirely with the Company.

1754. Then, do I understand you to say that you consider the testing-houses are not fair, as regards the consumer, in respect of the walls, the reflector, and the burner?—I do.

1755. Under those three heads?—Under those three heads; I might also state that the distance of 1,000 yards is not fair, and also that they require three hours' notice.

1756. Then you add to those other heads of the walls, the reflector and the burner, the distance and the notice?—I do.

1757. In all those five respects, do you think the test, as provided in the Act

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of Parliament, is not what it ought to be for the consumer?—I think it worthless.

1758. You think it worthless as regards the consumer?—Yes.

1759. What is your opinion as to the workability, if I may be allowed the expression, of the Act?—I expressed the opinion at first that it would be perfectly negative.

1760. You expressed the opinion at first that it would be, did you say, negative or nugatory?—Nugatory.

1761. Has experience confirmed that opinion?—I have not had a great amount of experience with reference to it.

1762. Then, having expressed your opinion in the first instance, have you changed it?—I see no reason to change it.

1763. Mr. *Woods.*] What is meant by the first instance?—When a discussion took place at the district Board whether they would act upon it, whether they would appoint a gas examiner.

1764. Mr. *Webster.*] I believe there was considerable discussion upon this subject when the Act was passed; were you present at that discussion?—Not when it was passed.

1765. In your opinion, should the standard of the testing apparatus be accurately defined?—Yes.

1766. Mr. *Staniland.*] Would it not simplify this examination to ask the witness whether he agreed with Dr. Letheby on these points; if this gentleman has heard his evidence, he can say whether he agrees with Dr. Letheby?—I was not here during Dr. Letheby's examination.

1767. Mr. *Webster.*] I have only two or three more questions to ask; do you think, Dr. Gibbon, that the testing apparatus and the standard should be more accurately defined?—I think they should, or be provided by the local authority.

1768. One question only about the effect of the disturbance of the streets; in your opinion, is that a very serious objection?—Very serious, on the ground of public health and its effect in increasing the price of gas.

Cross-examined by Mr. *Richards.*

1769. I understand the result of your testing to be, in short, that you have always found the gas above the Parliamentary standard, with one exception?—I have according to their apparatus; I have done it under protest.

1770. But you have found that they have obeyed the law?—I have.

1771. Have you ever tested the gas of the City of London Company?—I have.

1772. Where?—In Hatton Garden, I believe it was.

1773. You seem to object to the fitting up of the testing room; have you ever at any time raised any objection, pointed out how it would meet your views if it was fitted up differently?—I have, to my own Board.

1774. Have you ever to the Company?—I have to report to the Board.

1775. But you have not to the Gas Company?—I have not myself to the Gas Company.

1776. You saw this clock with a white face; did you never make any suggestion about it, or did they ever refuse to adopt any suggestion which you made?—I made no suggestion to them; I have done so to the Board, to the local authority.

The *Chairman* said the witness had to report to those who employed him; he had nothing to do with the Companies.

1777. Mr. *Richards.*] You go to the testing house, and you meet there, I suppose, some of the Company's officers?—I believe I have met them.

1778. In the course of conversation, have you ever made any suggestion which they have refused to take?—I have to the last gentleman who was examined, Dr. Aldis. I have met him there.

1779. I want to know whether you made any suggestion to any of the officers of the Gas Companies whom you met there, that an alteration should be made, and that that was refused.

The *Chairman* said there had been no allegation of that kind ever made.

1780. Mr.

1780. Mr. *Richards.*] Do I understand you to speak as to the London Company, and not as to the City Company?—I do.

1781. Where have you ever been to their testing-places?—In Bessborough-street, Pimlico.

1782. Did you give notice that you were coming to that place?—The clerk of the Board gave notice.

1783. You did not?—I think I gave notice on one occasion.

1784. How many times have you been there?—I have been three times.

1785. In the course of five years?—In the course of five years.

Re-examined by Mr. *Webster.*

1786. You told my learned friend just now, that the law had been obeyed?—Perhaps, according to the law, it has been obeyed.

1787. But has the spirit of the Act, so far as you understand it, been obeyed?—I think not.

1788. Do you conceive the Act to be defective, as regards protection to the consumer?—I do, most decidedly.

1789. Mr. Alderman *Lusk.*] You, as an educated gentleman, and having a good knowledge of chemistry, looking at that testing-house, do you think, all things considered, it is not fair to the public?—Decidedly not; strongly not.

1790. And, looking at the intentions of the Act of 1860, do you say the same?—I do; I might explain what I mean. Take this case of the reflector. There was a reflector behind the candle when I was last there. Supposing there were a gas burner producing 12 candles, a reflector would considerably more than double the amount: instead of 24 candles it would make it upwards of 30.

1791. Mr. *Morrison.*] Why should the reflector influence the candles?—If you had a number of candles in this room, they would give a certain amount of illuminating power; but if you bring them altogether in a sunlight, they considerably enhance the illumination of the room.

1792. Mr. Alderman *Lusk.*] You consider it is not a properly constructed instrument for the purposes of the Act?—I think not.

1793. Do you know anything about the old burner and the new burner?—I have seen the new burner in operation.

1794. Do you know any difference between the new burner and the old burner?—I see that it produces a considerable difference of light; one candle and a half.

1795. The light being equal to 13 candles, according to the Act, it makes all the difference which of the burners was used?—Yes, and what makes a much greater difference is the reflection.

1796. Would the quantity produced by the old burner be different from that by the new burner?—It would, I believe; one candle and a half.

1797. Then all the requirements of the Act would depend a great deal upon the burner you used?—It would.

1798. Then do you think there should be a standard burner in all instances?—I do.

1799. You think there should be a standard burner the same as there is a standard weight?—I do.

1800. In your experience, do you think that the Act is an operative Act?—I do not think it has done any good to the consumer.

1801. Sir *William Gallwey.*] You are here to object to the means that you possess for examining gas?—Yes.

1802. But don't you think it would be very easy for Parliament to give remedies and establish satisfactory tests?—Yes.

1803. Then, if satisfactory tests were established, don't you think that by these tests the Companies would be compelled to give such gas as ought to satisfy the public?—I think a local authority could do it much cheaper.

1804. You are not giving evidence as to the price, I think; merely as to the quality; you say satisfactory tests could be established by the authority of Parliament; then I ask you, supposing such satisfactory tests to be established, don't you think the Companies could be compelled by those satisfactory tests to give such gas as ought to satisfy the public?—I do.

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1805. *Chairman.*] You stated that you made tests by illuminating power; did you make any for impurity?—Only coloured tests.

1806. Not with regard to the presence of sulphur?—Not quantatively; it was merely sulphuretted hydrogen and ammonia.

1807. Did you find either?—On one occasion I found some ammonia.

1808. In excess?—Ammonia in excess coloured the paper.

1809. Mr. *Woods.*] The reflector you spoke about, as I understand, was a reflector not put to the apparatus?—Next to the apparatus; and the clock would act as well as a reflector.

1810. But you spoke of a reflector in the room?—I did; I meant the clock, and a reflector behind the gas-light too.

1811. Not the gas-light of the apparatus?—Yes, behind the gas-light.

Mr. *Edward Dresser Rogers*, called in; and Examined by Mr. *Hoggins.*

Mr. *E. D. Rogers.*

1812. ARE you a member of the Common Council?—Yes.

1813. Are you a member of the Camberwell Board of Works?—Yes.

1814. Are you a consumer of gas from three Companies, the City of London, the Phœnix, and the South Metropolitan?—In my office in London I consume the City of London gas, in Southwark the Phœnix, and at my private house at Peckham, the South Metropolitan.

1815. Were you secretary to the Surrey Gas Consumers' Association in Southwark, in 1849?—Yes, and in 1850.

1816. Was that an association of consumers residing on the Surrey side of the water, as to price and quality?—It was.

1817. Was Sir John Thwaites the chairman of the association?—The present Sir John Thwaites was then an inhabitant of Southwark, and was chairman of the association.

1818. The members of that association were supplied, were they not, by the Phœnix and South Metropolitan?—At that time they were supplied by the Phœnix and the South Metropolitan Gas Companies. Some portion of the district was supplied by the London, but it was mainly supplied by the South Metropolitan and the Phœnix.

1819. Was the question of gas supply under the attention of the committee of the association from 1849 to 1851?—Yes, in 1851 especially; the whole of the supply of gas in that neighbourhood at that time was causing great dissatisfaction to the inhabitants, and from that cause an association was founded of the consumers themselves, under the presidency of the present Sir John Thwaites, and the result was that the Companies were applied to, they then charging 6*s.*, to lower their price; and after the most earnest efforts on the part of the consumers, they being greatly dissatisfied with the price and quality, the consumers themselves, finding it totally impossible to obtain any change from the Companies, founded what was called and what is now known as the Surrey Consumers' Gas Company, under the impression that by founding a new Company, who promised to give gas at 4*s.* per thousand, of a higher illuminating power and better quality than the then existing Companies did, that they would do themselves good service; the Company was founded, and after a few years it changed its character from being a Consumers' Company to become an ordinary commercial undertaking for the supply of gas; this Company itself was the first, I believe, to arrange for districting the neighbourhood, and making an entire monopoly, as far as the gas question was concerned, of those districts; the consumers, therefore, lost all heart at any future time with regard to the question of founding a distinct Company; the consumers of gas on the Surrey side of London, those who have taken an active part, being determined in their minds that no other means than that of taking altogether out of private enterprise the question of gas supply can be of any real service to the gas consumers in London. The question of pecuniary interest to directors and shareholders of gas and water companies the public are now perfectly satisfied should be entirely lifted from the hands of those they are now placed in. It is understood in all parts of London that the consumers of gas have come to the determination that the pecuniary interest of the directors and shareholders interferes altogether with the question of giving good quality, and a low-priced gas.

1820. Mr. *Paull.*] Are they prepared to buy them up?—I am not prepared

to

to state to this Committee, who, I am quite sure, from their knowledge of all these matters are better qualified than myself to decide what course should be adopted; but I wish distinctly to state, with reference to something that has been attributed to me, that I never yet said the shareholders should not be compensated. I have a theory of my own with regard to the matter, which I am quite prepared to give to this Committee, but I most distinctly state that I never yet have said one word that shareholders in gas companies, amongst whom there are a very large number for whom I have the greatest personal respect. I have never yet said for one single moment, that gas shareholders should be prejudiced in the slightest degree. I have a theory of this kind with regard to this question, that the day must come, and not a very long time hence, when gas companies must be placed in the hands of corporations or of large municipal bodies, whether by the vestries as constituted at the present or by Mr. Mill's Bill. At present, we have a regulated monopoly, by which certain persons are guaranteed a capital of 10 per cent. Now, we know very well, or those who have examined the corporate Acts of these several companies know perfectly well, that the principal capital of these companies is perfectly fictitious. It does not represent honest money paid in; that is to say, there are hundreds of shareholders who have purchased gas shares at something like 60 or 70 per cent. premium from those who originally paid for those shares. Now, if you look at this question as a question between the public and the Government of this country——

The *Chairman* suggested that it would be better if the Witness allowed himself to be examined by Counsel.

1821-2. Mr. *Hoggins.*] Will you have the kindness to tell me if you had your attention drawn to the subject of gas lighting, and particularly the effect of the Gas Act of 1860 upon consumers?—I have. From having taken the position of honorary secretary to this Committee, I have been made the depository for hearing complaints, on the other side of the water particularly; and my experience has been, that consumers under the operation of the Gas Act of 1860 have constantly complained. It was felt by those who were parties to the Gas Act of 1860 that three years should be allowed to pass before any active action was taken by those who were promoters of it to endeavour to upset it.

1823. *Chairman.*] You mean to state that the Act of 1860 has failed to satisfy the public at large?—Unquestionably so.

1824. Would you state in what particulars?—In the particular of the quality of the gas and the price of the gas; and again, that there is no practical remedy for any ordinary consumer to obtain any advantage for himself with regard to the present bad supply.

1825. You mean that the remedies, such as they are under that Act, are unsatisfactory and insufficient?—Unquestionably. I would wish to be allowed to add, in continuation of what I was stating when you were kind enough to interrupt me, that the question of capital is felt by the public to be in a very unfair position, and the public do desire this Committee, if they would be kind enough to do so, to make it their business to inquire into the present amount of capital of the several companies.

Chairman.] I may interrupt you again, by stating that we found, for the convenience of this Committee, it was advisable to divide the inquiry under two heads. The head we are now on is the quality, and the satisfaction the public derive from the use of the gas as supplied by the Companies. We are coming presently to the question of price, and the way in which it acts upon the question.

Witness.] Should I have an opportunity of speaking on the question of price.

Chairman.] Certainly.

1826. Mr. *Hoggins.*] You said the quality had been objected to. Did you ever hear that there was any complaint of sulphur?—I have, repeatedly.

1827. Has that been temporary, for a moment, or continuous?—I have heard it spoken of as nearly poisoning the individuals residing about Rother-

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hithe or Dockhead upon one occasion; but I believe that occasion was exceptional.

1828. Was it on one particular day, hour, or moment, or was it spread over some length of time?—One particular afternoon.

Cross-examined by Mr. *Davison.*

1829. I heard you say you were secretary to the Surrey Gas Consumers' Company?—Honorary secretary to the Surrey Gas Consumers' Association.

1830. Are you honorary secretary to any gas association now?—I am not.

1831. Not to any committee?—No, I am one of the committee of the City of London Gas Association at the present moment.

1832. Not the honorary secretary?—No, I am not.

1833. May I ask you what is your business?—Auctioneer.

1834. Are you in the habit of attending, not as an auctioneer, but as an orator, at the various vestry meetings about this matter?—In no other capacity than yourself in this room.

1835. I am paid for it?—I am not paid for it; I attend the vestries that I am elected to as a member of those vestries, in the same kind of way as Mr. Lowe or Mr. Horsman attend the House of Commons.

1836. Will you leave Mr. Lowe and Mr. Horsman, and tell me whether Mr. Dresser Rogers does not attend at various vestry meetings for the purpose of discussing this gas agitation?—Not specially; as a question appertaining to the parish.

1837. Have you discussed it at almost every vestry where you could get to?—I dare say I have spoken on the gas question at some of the vestries.

1838. Now about the gas consumers of Surrey; is their present price 4*s.*?—The Phœnix Gas Company's present price is 4*s.*

1839. Will you forgive me for asking you to answer my question; my question was confined to the Surrey Gas Consumers' Company; now is their price at present 4*s.*?—I think their price is 4*s.* 6*d.* at present.

1840. Should you be satisfied if it were 4*s.*?—No, certainly not.

1841. Now you have been taking a pretty active part in this matter, beside going to vestries, have not you?—Yes.

1842. Have you been about these rooms since this inquiry began?—I have been in this room ever since the inquiry began.

1843. And about the galleries?—I have passed through the galleries coming here.

1844. And Dr. Letheby is a gentleman, I am sure, who has the entire confidence of the Corporation?—I cannot answer for the Corporation.

1845. I ask you this, have you gone so far in your agitation as to complain to Dr. Letheby since he gave his evidence as to the nature of it?—I have.

1846. Have you said you would go so far as to move the Common Council that Dr. Letheby be discharged from his office?—Certainly not.

1847. Or anything of the sort?—What I said was this; when Dr. Letheby came out from examination before the Committee, he stated to me, in the presence of another party, "Your Bill is doomed."

1848. What said Mr. Dresser Rogers?—Mr. Dresser Rogers said, "Then I shall be prepared to bring your evidence before the Court of Common Council, if requisite;" that was my reply.

The *Chairman* said they had better not have any evidence as to discussions in the lobby; it was not pertinent to the inquiry.

Mr. *Davison* said it was only to see what Mr. Rogers's views were on the matter.

1849. Now your experience of course is confined to the time you were secretary to the gas association?—No, I think not.

1850. How long were you secretary, first of all?—I should think from one to two years.

1851. As regards the capital, you have been good enough to say the capital of the Company is fictitious; do you apply that remark to all the Companies, or any one in particular?—I do not say the whole of the capitals of the gas Companies are fictitious, but what I do say is this, that if an equitable adjustment

was made of the capitals it would be found a large proportion of the older Companies' capital is capital which could not have been applied to the purposes of capital; I mean, that there are hundreds of persons who avail themselves of the gas shares being low in price to purchase those shares, and the gas being a great necessity now to tradesmen, the capital question should be settled, and the dividends not be payable upon fictitious capital.

1852. Would you be good enough to name a Company?—I take it in this way, that, looking at the gas manufactured, it must be ruled by the amount of money required.

1853. Is that the name of a Company?—Well, I can give you two Companies at all events.

1854. You can take the best example?—I will take the Phœnix, if you like. I was about to explain about the capital of a gas Company, that it should be ruled by the amount of the money required to make a certain quantity of gas, and, therefore, if a Company has a larger capital than is required to make the gas, it follows that the capital in excess is receiving a dividend out of the pockets of the consumers.

1855. Supposing Mr. Dresser Rogers held some Phœnix Company capital, what would you do with it; would you take it from him?—I was about to explain. My impression is this. It is one suggestion of mine that the capitals of the several gas Companies in London should be equitably adjusted, and a fair rate of interest allowed to all the shareholders in those several gas Companies, taking five or six per cent., and making the capital stock of the Companies a terminable stock; that is to say, a 99 years stock; paying at present five per cent. on the capital of the several Companies when properly adjusted, and in 99 years the capital of the gas Companies ceases to exist.

1856. *Chairman.*] You would turn all the capital of the gas Companies into terminable annuities?—Yes.

1857. You are aware, probably, that by Act of Parliament they cannot devote more than a given amount per annum?—That is the very grievance consumers feel, that while by what you call an Act of Parliament they are not allowed to do so, the consumers suffer to a much larger extent.

1858. You mean by indirect action?—Indirect action; building up new works; raising the salaries of the officers.

1859. Does not the Act of Parliament give power for a reserve fund for extra works or new works?—It does do so, but I believe it is evaded.

1860. Is there not such a power?—There is a power, but I believe it is evaded. I believe there is an accountant examining these accounts who will be better prepared than myself to give evidence upon the subject.

1861. Mr. *Dutton.*] Your remarks, as far as I have heard them, seem to apply to a scheme for regulating all joint-stock Companies, rather than anything that has to do with this Bill. You are proposing a new scheme for the consideration of joint-stock Companies in general?—No; I left gas and water altogether from the ordinary category of trade operations; I take them as necessaries.

1862. *Chairman.*] I understand by your answer as to turning the whole of the gas Companies into one Corporation, you would amalgamate the whole of them that now light the metropolis?—As far as capital is concerned. I would have the gas Companies of the several districts managed by the municipal authorities of those districts. For instance, you would take the Parliamentary divisions of the metropolis.

1863. How would you deal with the City of London?—By the Bill which we bring to you.

1864. You mean to have a City Act?—Yes.

1865. For the rest of London, you would leave it to the vestries?—I would either leave it to the municipal authorities of the districts or would bring in fresh Bills.

1866. You do not propose to put them all into one common company, and amalgamate the whole stock as a sort of metropolitan debt?—I do not think that would be advisable; I think it could be done more equitably.

1867. And you would provide for that arrangement and management by the local authorities?—Yes.

1868. Mr. *Paull.*] Have you so high an opinion of the municipal authorities as to wish to put it into their hands?—I have in London; I think the consumers

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sumers of gas might derive very great benefits, and also the consumers of water, by putting the undertakings in the hands of the municipal authorities.

1869. *Chairman.*] Do you think it would be advisable to hand it to the Metropolitan Board of Works?—No; I do not think that body would work it well.

1870. You do not think that body would work it well?—No.

1871. Sir *William Gallwey.*] Your opinion is that the Companies are making enormous profits?—There is no question about it.

1872. And that they find difficulty in legally disposing of their money, and so they do such things as raising the salaries of their officers?—Anything they can do to spend money.

Mr. *C. J. Clemenshaw*, called in; and Examined by Mr. *Sargood.*

Mr. *C. J. Clemenshaw.*

1873. I BELIEVE you have the management of the Manchester Corporation Gas Works?—I had the management of them.

1874. For how long?— For 14 years.

1875. What is the illuminating power of gas that you are able to manufacture there?—Twenty-two candle gas.

1876. What coal do you use for it?—Cannel coal.

1877. Do you find from that you get a better quality and a greater freedom from impurity than from any other coal?—Unquestionably so; not any other coal.

1878. *Chairman.*] You did mix it?—No, it was entirely cannel coal; it is very superior to the common coal.

1879. Mr. *Sargood.*] There is a class of coal from which you can even get a higher illuminating power than that which you use at Manchester?—There is.

1880. I presume you consider freedom from any noxious quality highly important in the consumption of gas?—Unquestionably it is.

1881. What are the most usual impurities prevailing in the ordinary use of gas?—The impurities are ammonia and sulphuretted hydrogen; these are removable, but bisulphuret of carbon is not at present removable, and that in combustion produces sulphurous acid gas, which afterwards becomes sulphuric acid in contact with the atmosphere; and that it is which destroys picture frames, engravings, books, and other things.

1882. What means of purification did you use at Manchester?—Merely the ordinary means of purification.

1883. Did you use iron or lime?—Lime.

1884. Do you know any reason against using that, assuming that to be the best purifier?—Excepting the annoyance to any neighbourhood in which it is used.

1885. You would suggest then that the work should be carried on at a place not too densely populated?—Decidedly so.

1886. You have not used the more inferior coal, I presume, at Manchester?—No, we have not.

1887. Will you tell me whether you, as a practical man, know any reason why the City of London should not be favoured with as good gas as the Corporation of Manchester enjoy?—No, I do not see any good or sufficient reason.

1888. May I venture to go as far as to ask the price, and know reasons for it?—The price per thousand at Manchester averages 3*s.*

1889. For 22-candle gas?—Yes.

Cross-examined by Mr. *Richards.*

1890. There are two or three different prices, are there not?—There are slightly different prices, but the difference is very small.

1891. You know it is rather the prime cost of the coal that has a little to do with the prices of gas?—Unquestionably it has.

1892. What do you pay at Manchester for your coal?—Fifteen shillings per ton.

1893. Delivered on your works?—Delivered on our works.

1894. That is Wigan cannel?—Yes.

1895. Do you know the price of cannel at present in London?—I know what it could be delivered at.

1896. What

1896. What is the market price?—I should be giving very imperfect evidence if you take quality without going into price.

1897. *Chairman.*] Our inquiry is as to both heads?—What I am prepared to show is this, that by proper arrangements Wigan cannel gas, 22-candle gas, ought to be supplied and can be supplied in London at the same price as it can be in Manchester.

1898. You think the gas could be supplied?—The gas can be supplied.

1899. Mr. *Richards.*] That is to say, by taking the Wigan cannel?—Wigan or any other cannel.

1900. Probably the London demand for Wigan cannel would not tend very much to lower its price?—It is not confined to Wigan cannel gas; there is Bulkhead and various other cannels that would be used.

1901. I was asking you if you could tell us what the present market price of Wigan cannel coal is in London?—I cannot tell you what it is for gas purposes.

1902. Can you tell us what it is for any purposes?—Then I can tell you that taking into account the large value of the secondary products in London, that Wigan cannel to manufacture gas would cost no more in London than it would in Manchester.

1903. Will you be kind enough to name the price of Wigan cannel in London for any purposes, gas or otherwise?—23*s.* a ton.

1904. Mr. *Paull.*] Is that the existing price, or is it the price at what it could be supplied?—I believe it is the existing price for gas purposes.

1905. At which it is supplied?—Yes.

1906. Mr. *Richards.*] Are you aware that the Companies are paying under contract at the present moment 26*s.* a ton for Wigan cannel?—That may be so, but they must be at a greater distance from the railway than the gas-works generally are.

1907. But you are not prepared to say that they do not pay 26 *s.* a ton?—No, I am not.

1908. Now, have you not three different prices at Manchester, one in the city, one outside the city boundary, and one in the outer township?—Yes.

1909. What is the price of gas in the outer townships?—3*s.* 6*d.* a thousand.

1910. How long has your connection with Manchester ceased?—For about seven years.

1911. When you speak of the cost of coal at Manchester, are you speaking from personal knowledge at the present time, or seven years ago, when you were there?—I am speaking of my own knowledge at the present time.

1912. Now you have stated that the residual profits in London are so great, as compared with Manchester, as virtually to reduce the price of Wigan cannel in London, to the same price as it is in Manchester. What is the price per chaldron for coke made from Wigan cannel in London?—My estimate of the value of coke in London is 16*s.* 8*d.* a ton.

1913. A chaldron?—No, for a ton of coke.

1914. Are you aware that coke is never sold in London by the ton?—I am aware of that.

1915. Therefore, you choose a standard which you know is not used in London. I only want to know what number of tons of coal is represented by a ton of coke?—I do not know; the usual mode of selling coke in London is by the chaldron, in all other places it is sold by the ton.

1916. Mr. Serjeant *Kinglake.*] How many hundred weight go to the chaldron?—The chaldron of coke weighs about 14 hundred weight.

1917. Mr. *Richards.*] Then a chaldron and a half of coke, we may take as about a ton?—About that.

1918. And is not a chaldron of coke about the product of a ton of coal?—About that.

1919. Then a chaldron and a half of coke would represent a ton and a half of coal, about that?—Yes.

1920. Now, you are speaking of cannel coke?—Yes, I am.

1921. You are aware that at all events, in the London market, the coke produced from cannel coal commands a very much lower price than coke produced from Newcastle coal?—There is no reason why it should command an inferior price.

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1922. Are you aware people will not pay the same price for it?—I am not aware of that.

1923. Is there any other residuary product which you would like to name as being so much more valuable in London than in Manchester?—No, there is not.

1924. I presume the ammoniacal liquor and the tar are about the same in both?—Yes.

1925. Therefore it is really reduced to the question of coke?—Almost to the question of coke; the product of the tar is rather more, but not to any very large amount.

1926. What do you give in Manchester for coke?—6*s.* 8*d.* per ton.

1927. That is the produce of a ton and a half of coal?—Yes.

1928. Then I presume a certain quantity of your residuary coke you have not for sale, but you use it up on your premises?—Unquestionably.

1929. What amount of coke do you use for that purpose—a third?—About a third.

1930. From 30 to 40 per cent.?—Yes.

1931. And the remainder you have for sale?—The remainder we have for sale.

1932. How long has your price been at what you name it to be now, 3*s.*?—For several years.

1933. Because I see here in 1861 it was 4*s.*?—Yes.

1934. When was it reduced?—It was reduced about 1863.

1935. This is the beginning of 1866; you call that several years?—From two to three years.

1936. Was it reduced from 4*s.* to 3*s.* at once?—No, it was reduced from 4*s.* to 3*s.* 6*d.*, and then to 3*s.* 4*d.*

1937. When was it at 3*s.* 6*d.* last?—As far as I can recollect, I should think in 1862.

1938. Do you mean it would only remain at 3*s.* 6*d.* one year?—No; if I recollect rightly it was reduced the following year.

1939. But what is the capital of the Manchester Corporation embarked in gas?—It is about half a million of money; I have not the exact capital.

1940. Is it 306,000*l.*?—No, that is the reduced capital; the actual capital employed is considerably larger than that.

1941. The actual capital is considerably larger?—Yes.

1942. Do you borrow your money, and then pay a certain rate of interest upon it, or not?—We pay interest upon it.

1943. What rate of interest?—From 4 to 5 per cent.

1944. In Manchester, does it happen that you have made certain profits by your gas, and have applied them to other purposes than gas?—Yes.

1945. I think, making some money upon gas and losing money upon water; at one time you used to apply the profits of your gas to making good your water?—Yes.

1946. Did you pay off your bonds out of the profits of the Gas Company?—Yes.

1947. Gas bonds or water bonds?—Gas bonds.

1948. And then, finding your water-works unprofitable, you applied the profits of the gas to carry on the water?—A portion of the profits of the gas was applied to that purpose.

1949. Now, during the time that you so did this, what was the price that you were charging for your gas; when was it you did that?—It was some eight to ten years ago.

1950. That we may take, I suppose, at about the year 1855 or 1856, when you were charging, I think 5*s.* per thousand?—Five shillings per thousand.

1951. So that instead of reducing the price of your gas, you paid off the debt of the Water Company?—Decidedly not; there was a fair and reasonable surplus profit upon the gas, and that surplus profit was partly applied under the Act of Parliament to the reduction of the cost of water.

1952. What was the profit?—About 40,000*l.* a year.

1953. What was your capital?—It represented about 10 per cent. upon the capital.

1954. How did you become possessed of these works originally?—They were established in 1817, by the ratepayers, and in 1824 there was an Act obtained

obtained for them, and they have been carried on there since by the ratepayers, the profits having been applied to the improvement of the town, and those profits reaching I should suppose at this time from three-quarters to a million of money.

1955. Then they were established in 1817, and you bought them in 1824?—They were never bought; they were absolutely commenced without an Act of Parliament, in the first instance, when gas was originally introduced about the year 1817.

1956. Who were they incorporated by then?—There was no absolute incorporation.

1957. Not until they got their Act seven years subsequently?—No.

1958. And then it became a ratepayers' association?—It belonged to the Commissioners for the time being.

1959. The Committee do not scarcely understand about the capital; what is the annual return upon your capital now?—I do not know.

1960. What is your last period of knowledge?—I have returns up to 1864.

1961. But you have ceased to act for the Company?—I have ceased to act for the Company.

1962. For seven years?—Yes

1963. Then you do not know what the present return of surplus profit is?—Excepting from the printed reports.

1964. What is the surplus profit, to your knowledge?—You will find it in the report on the second page (*handing the book to the Chairman*).

1965. Mr. *Richards.*] You have had nobody in competition in Manchester?—No.

1966. And that from the very commencement?—From the very commencement.

1967. That is 40 years ago?—From the year 1824.

1968. Did you pay for your works in full, or did you get them at a depreciation?—Unquestionably in full.

1969. Mr. *Woods.*] What is the meaning of obtaining them "in full," because you never bought them?—I was asked a question as to "paying for them in full." I gave it in that way because it was a more direct answer. The Act was obtained by the Commissioners, and the money advanced by the ratepayers was repaid by the Commissioners.

1970. Mr. *Richards.*] From the Commissioners it went into the hands of the Corporation?—Precisely.

1971. Can you give us the date of that?—I think it was in 1845.

1972. Are the works rated?—They are.

1973. *Chairman.*] What year is this report?—1864.

1974. Then they still pay over a balance of profit to other important purposes?—They do.

1975. Therefore the gas consumers in Manchester are taxed for purposes other than those of gas?—A reasonable profit is charged for the gas, and the surplus profit is simply handed over for other purposes.

1976. For municipal purposes?—Yes.

1977. Mr. *Morrison.*] Have you an Act of Parliament compelling them to reduce the price of gas when you have a surplus profit of a certain amount?—No, there is not.

1978. Anything analogous to the 10 per cent. clause?—No; it is in the hands of the Corporation, and of course the Corporation can move that question whenever the profits are in excess.

1979. Are you aware of the circumstances under which the Manchester Corporation obtained possession of their works?—They were purchased by the Corporation; I forget in what year.

1980. Mr. Alderman *Lusk.*] I think you say you are a practical gas manufacturer?—Yes.

1981. And have been so for a long time?—Yes.

1982. Do you think from cannel coal you can easily get 20 candles light?—Quite easily.

1983. And you can produce that light in London at 3*s.*?—There is no question about it, under proper regulations; I do not mean to say it can be done now.

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1984. I ask you, as a gas manufacturer, you say you think you can produce 20-candle light at 3 *s.* per thousand feet?—Yes.

1985. The net cost?—The net cost, bearing profit, as a matter of course.

1986. You say it is reduced to that now in Manchester?—In Manchester, and Liverpool also.

1987. I understand there is a profit still left over?—Yes.

1988. Then, taking things by comparison, we pay 4 *s.* 6 *d.* a thousand for gas from common coal. What could you produce gas from common coal for in London?—At less than 3 *s.* a thousand; the difference is not very great.

1989. Mr. Serjeant *Kinglake.*] What per cent. would you pay for the capital?—Ten per cent.

1990. You think you could reduce cannel coal to 3 *s.* per thousand cubic feet, paying an interest of 10 *l.* per cent. on the capital?—Yes; the way in which I try to prove it is this: that if Manchester could obtain cannel coal as cheaply, and sell the coke as dearly as it is in London, then we could make gas at something like 2 *s.* 8 *d.* per thousand feet.

1991. Mr. *Morrison.*] At Manchester you have never had any Parliamentary contest?—I do not mean to say it could be done under existing circumstances in London.

1992. Mr. Alderman *Lusk.*] I want to speak about mere matter of fact. As a scientific man and a man of business, you say you can produce gas here at 3 *s.* from cannel coal?—Yes.

1993. And have a profit upon it?—Ten per cent. profit.

1994. Ten per cent. profit still?—Yes.

1995. Do you think it is desirable for a community to have light supplied by a Company who make profit out of the light?—I think a fair and reasonable profit ought to be obtained out of the light.

1996. You know air is very essential to all in existence?—So it is.

1997. So is light; now do you think it desirable that any Company should supply you with air, and make a profit out of it?—I quite see the force of your views; it is not generally done; it would be well if it could be done.

1998. Do you think from analogous reasoning it would be desirable that light should be supplied by Companies who receive profits?—I do not think it would.

1999. Therefore you think the Manchester people adopted a very wise course in supplying their own light?—Yes.

2000. And if there is any surplus left over in applying it to save themselves from taxation?—Yes.

2001. The simple fact of the matter is that the profit goes into their own pockets?—It does.

2002. Then you think lime is the best purifier for gas?—Lime is the best purifier for gas, but oxide of iron is also a good purifier for gas, that creates a less nuisance; consequently it is desirable in many cases that ironstones should be used in preference to lime.

2003. What do they use in Manchester?—Lime.

2004. Then the gas works must be a good way out of town?—They are not out of town, they are in town; but they are very considerably detached from other buildings, and a river surrounds them, so that the nuisance does not extend beyond the works themselves.

2005. Does gas deteriorate coming a long distance?—It does slightly; there is a deposit of the higher illuminating gases; in fact, in all gas there is a certain proportion of oils carried off with it, and these, in their transit through a great length of main, are deposited in the main.

2006. When you spoke of what you used to pay in London, one of the reasons you gave was that the products of the coal are more valuable?—Yes.

2007. You are speaking about the general products of coal in London; that there is a better market for them than in Manchester?—Simply for this reason ——

2008. And that better market would make up for the difference of carriage?—Precisely.

2009. That is what you simply mean?—The reason for it is this——

2010. It does not require much reasoning?—It is only the difference between the value of coal in Manchester and the value of coal in London.

2011. One

2011. One other point—about breaking up the streets—do you think it desirable that the same body who have power over the streets for water and for paving, should have power in all cases?—I think most decidedly they should.

2012. What is your reason for that?—Simply because the mains would be better laid; they would be under one general superintendence, and the streets would be less broken up.

2013. You think that three or four bodies lifting the streets, they are apt to be broken up very often?—I think there being three or four bodies, as in the case of London, is the cause of gas being so high as it is.

2014. Because there are so many Companies?—There are so many Companies; I believe that is it; there has been competition in the City of London, very large competition, the various consumers have made use of their pipes, these pipes have been cut off; but they have not been cut off from the mains. It is a well known fact, that the whole soil of London is saturated with gas; the consequence is, that the loss by escapes is so enormous, that if that was investigated it would be found to be the cause of the high price of gas in London. It is not that there is a difference in the price of coal, or any question of that kind; it is a question of the present position and state of things.

2015. Then the management is not so good as it ought to be?—From circumstances; I do not mean to say the actual management, but from circumstances.

2016. Economically considered?—Just so.

2017. Why would it be greater in London than in Manchester?—Simply from the fact of there being a number of companies having a greater extent of mains than are absolutely required for the supply of that particular quantity of gas, and from the vast number of service-pipes. Service-pipes will only last three, five, or ten years; the escape arises from the service-pipe, and not from the main. There being simply one set of mains in Manchester, of course the loss is but small. The loss is not only the loss on gas, but it tells upon the management and everything else; and that it is, it would be found upon thorough investigation, that makes the price of gas so high.

2018. Do you think we use the best kind of pipes in London?—It is not a question of pipes. There are two descriptions of pipes; the one is the main pipe, made of cast iron, the other is a smaller service-pipe, which is made of wrought iron. The quantity of service-pipes in London is enormous.

2019. I suspect from your evidence that you are rather inclined to have districting?—That is the only economical way of supplying gas.

2020. Mr. *Morrison.*] What is your mode of testing the illuminating power and purity of gas in Manchester?—Precisely the same as in London; they use Bunsen's photometer.

2021. Is it done by an officer of the Corporation?—It is.

2022. Mr. *Woods.*] In one of your answers to the cost of common coal gas and cannel coal gas, you used the expression "not much difference." What do you mean? Do you mean that there is not much difference in the cost of cannel coal gas and common coal gas?—Not in London.

2023. Do you mean that they may make cannel coal gas as cheaply in the City of London; that is to say, not as cheaply per 1,000 feet, but as cheaply, having reference to the illuminating power?—Oh, immensely more cheaply then.

2024. What do you mean by "immensely more cheaply," when the illuminating power is taken into consideration. I wish to take a consumer's view of the question at this moment?—Then unquestionably the higher illuminating gases are immensely cheaper than the common coal gas.

2025. That is with gas having the illuminating power of 22 candles; if a man wants in his shop a particular degree of light, it is a much cheaper gas to have than the commoner kinds of gas, even although the Company is properly paid for making it?—Precisely so; the fact is this, that although taking the price of gas, it was 4*s.* 6*d.* a thousand, and the other 3*s.*, a consumer would have to pay 8*s.* for the quantity of light, and it is light, it is not gas it is light that he pays for. He would have to pay 8*s.* for what he would give 3*s.* for in Manchester.

2026. We have heard from former witnesses that there is a loss of 20 per cent.

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cent. on the quantity of gas in London by what they say is the technical leakage. Can you tell us what the technical leakage at Manchester has been?—Ten per cent.

2027. Is the soil charged with gas at Manchester?—No; it is not.

2028. Do they detect the escapes in Manchester in the sewers?—Certainly not.

2029. It has been given in evidence that they do detect it in London in the sewers; now, as to the cost of making gas in the country, and carrying it into the town, it being necessary for any public reason to do so; is the cost very great?—Certainly not.

2030. Is the waste very great?—No, it is not.

2031. Assume to yourself a main a mile long, or three, five, or six miles long, without any supply upon it?—Six miles is rather far.

2032. Why is it far?—It would be carried in a considerable body as a matter of course, and that is a very important thing, because if it is carried in a considerable body, and with a certain velocity, it would carry with it all the heavier hydro-carbons; but there would unquestionably be some slight deterioration in quality; now, in Manchester, we used to manufacture gas at one works about a mile and a half off the place of its delivery, but there was no perceptible deterioration in that distance.

2033. *Chairman.*] What is your experience of the extent to which gas can be carried effectually?—We carried it at Manchester $7\frac{1}{2}$ miles.

2034. With or without deterioration?—Without any appreciable deterioration; it would be difficult to detect it.

2035. Then the only question of expense was the elongating the mains?—Precisely.

2036. Do you estimate that at any given cost per mile?—It depends entirely as to the source of the supply of the coal itself, whether it would be more expensive or not. If coal could be got more cheaply at one particular locality, it would probably pay very much better to convey the gas to a certain distance, that is, within a moderate distance.

2037. Mr. *Woods.*] Do you mean the convenience of wharfage or railway?—Yes.

2038. *Chairman.*] Delivery in fact?—Exactly.

2039. Sir *William Gallwey.*] Does the distance necessitate larger mains?—Unquestionably it does.

2040. Is not that a great source of expense in having gas at a considerable distance?—It is.

2041. Are there any gas works besides your own in Manchester?—No.

2042. Have there ever been?—No, except the private manufacturers, but they have discontinued to manufacture gas in order to obtain a supply from the works.

2043. *Chairman.*] In your opinion, if you could get your coal delivered with equal facility at a distance from town, it would be probably your opinion that gas works could be better established for various reasons beyond the extremity of the buildings?—Unquestionably.

2044. If you could obtain the necessary site and delivery?—Unquestionably.

2045. Mr. *Morrison.*] Is there any loss of illuminating power at a distance of seven miles?—It is impossible to give an opinion; I should say there would be a slight deterioration.

2046. Mr. *Hartley.*] The gas works at Manchester are not seven miles from Manchester, are they; but the gas is carried through pipes, or the service pipes extend to that extent?—Yes.

2047. But at Birmingham the gas works are established six miles from Birmingham?—They are.

2048. They are established at the Colliery?—Yes.

2049. And the gas is conveyed six miles through the large mains to the town?—Yes.

2050. *Chairman.*] Have you a knowledge of those works at Birmingham?—I have not.

2051. Mr. *Woods.*] Cannel gas has a higher illuminating power; is cannel gas purer?—Unquestionably.

2052. Is it freer from sulphur?—It is.

2053. What degrees of sulphur have you in the Manchester gas?—From 13 to 13½ grains of sulphur to the hundred feet of gas.

2054. You represent that as an average condition?—As an average condition, but coal will vary from 20 to 30 grains.

2055. *Chairman.*] What coal are you speaking of?—I am speaking of Newcastle coal according to the reports of Dr. Letheby.

2056. Are you speaking of your own coal in Manchester?—I am speaking of our own coal at Manchester.

2057. But even the cannel coal varies?—Unquestionably; it contains as high as 30 grains.

2058. You said coals vary in quality; do you mean the difference between Newcastle coal and cannel coal varies in quality, or do you mean coal out of the same mine are varied in quality; what difference will you assign to cannel coal?—I have tested under ordinary circumstances cannel coal producing 22 candle gas, as ordinarily manufactured, and I have also tested it, producing 26 candle gas.

2059. What variation will you assign to it as to the degrees of sulphur?—It will vary from probably 12 to 16.

2060. And the quantity of ammonia; was that very much in cannel gas?—The ammonia is removable; the sulphuret of carbon is not; there is one important point on which I should like to be understood with reference to the presence of sulphur; you see it would be necessary to use 87½ per cent. more coal gas than cannel, in order to obtain the same quantity of light, consequently it is not the difference between the quantity of sulphuret of carbon in the one case or the other, but it is the quantity of gas it is absolutely necessary to use in order to get the quantity of light required by the consumer.

2061. Will you state what is the difference with the same quantity of light?—It would be necessary to calculate that; in that case coal gas would contain about from 38 to 40 grains of sulphur against 13½.

2062. That is nearly in the proportion of one to three?—Precisely.

2063. That profit of 40,000 *l.* a year you have described in your main evidence; what price of gas was it reckoned on. Counsel asked you various prices; there was 40,000 *l.* a year which, speaking generally, you said was the profit; was that on 3*s.* gas or on 5*s.* gas?—I think, the profit I mentioned 40,000*l.*, was upon 5*s.* gas, but the profit now reaches generally, what may be termed the profit, 55,000*l.* upon 3*s.* gas.

2064. Are you prepared to state the product of the Manchester gas works; what is the product in quantity?—About 1,000 millions.

2065. Will you state the length of the mains?—Upwards of 300 miles.

2066. You said what has been termed technically "blue billy," is a very deleterious chemical compound, and I suppose that the long use of that by making gas impure transfers the impure compound into the dwelling houses instead?—If the sulphuretted hydrogen is not entirely removed it does.

2067. Mr. *Hartley.*] Did you hear Dr. Letheby's evidence?—I did not.

2068. Then you did not hear him state on his visit to Newcastle, he only found five grains of sulphur in the hundred cubic feet of gas?—I did not.

2069. If that were so, should you say that was a very high standard of purity?—A very high standard of purity; there are coals that contain scarcely any sulphur.

2070. Mr. *Paull.*] I think you said 22 candle gas costs 3*s.* per thousand at Manchester made from Wigan cannel coal, at 15*s.* per ton?—Yes.

2071. Did I take you correctly, that the same Wigan cannel coal would cost 26*s.* per ton in London?—Twenty-five shillings.

2072. First you said 23*s.* per ton would be charged now in London, and then when the learned counsel asked you whether 26*s.* was not the price, you said 26*s.* is now paid; that must be at a greater distance than any of the existing works?—Very true; 23*s.* is the price at which it should be delivered to the City of London.

2073. Well, now you have said that, although there is that difference of price between the cannel coal at Manchester and in London, notwithstanding 22 candle gas could be supplied in London at the same price as that now supplied

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plied in Manchester; will you explain how that can take place?—I will give you my calculation, which will probably be the better way of showing it; the cost of manufacturing gas in coals, labour, retorts, purifier, wear and tear, after deducting the secondary products, is 18½ *d.*; in Manchester it is 18·44.

2074. So that there is a balance between 18½ *d.* and 3 *s.*, as well as the coke to go for profit?—To make a comparison I will explain to you how I arrive at those facts. I add to that the greater cost of carriage to London, which is 10 *s.*, compared with Manchester, which is 2*s.* 6 *d.*, it makes the cost of making gas out of cannel coal in London 27½ *d.*; I then deduct the greater value of the secondary products in London, which I estimate at 4 *s.* 10½ *d.* or 5·85 *d.* per thousand cubic feet; that amounts to 21·65 *d.*; I then add the cost of distribution, and interest upon capital, profit, and so on, which comes to 18 *d.* per thousand feet, making the total cost of gas in London 39·65 *d.*

2075. That is 3 *d.* more than the 3 *s.* you talked of?—Yes.

2076. What will be the result?—I will explain that if you will allow me. Inasmuch as the mains in Manchester are upwards of 300 miles long, and the mains in the City of London would not be more than 100 miles long, there were only 50 miles in the street, the consumption there is half as much again; I deduct the 3 *d.* for the less costs of distribution, reducing the price to 3 *s.* per 1,000 cubic feet.

2077. Then with reference to the present price of cannel coal; can you form an estimate of what would be the increased price per ton if the demand increased to 200,000 tons per annum?—I believe it could be supplied; in fact, I have reason to believe it would be supplied at the same rate as that I have estimated.

2078. That if there were an increased demand of 200,000 tons cannel coal would still be 23*s.* per ton?—I speak from personal inquiry.

2079. Mr. *Woods.*] In your experience at Manchester, had you two standards of quality of gas?—No.

2080. Do you know any reason why there should be two standards of quality in the town?—Certainly not.

2081. Why not?—There is no reason why there should be.

2082. Cannot you conceive of poor districts being fond of bad gas?—As the higher illuminating gas is decidedly the cheapest even at a somewhat increased price, I cannot understand why there should be two qualities.

2083. Now as to testing at Manchester, the test you said was a test made by the Corporation, who were the makers, and it was in the public interest, is there anything you can recommend in the way of testing in London?—I think it should be entirely under the charge of the local authorities.

2084. Why?—Because they could adopt those burners that are in general use. I am quite aware from hearing the evidence, and was aware previously, that a certain burner is used for testing gas, which really does not give the actual value of the gas to the consumer. My opinion is this, that it is the quality to the consumer and not to the manufacturer that should be tested.

2085. There is another question I want to ask, you have given an opinion of what the cost of gas might be in the City of London, made from cannel coal, and you have been asked by the learned Member for St. Ives, if you thought coal would rise in price, and you said you thought not; but the price of London gas is much higher than 3 *s.*?—It is 4 *s.* I believe,

2086. The common coal gas?—Yes.

2087. And the cannel gas?—6 *s.*, I think.

2088. Would the fact that gas is supplied in London at 4 *s.*, or 4 *s.* 6 *d.*, enable a higher price to be paid for the coal in case it were to rise in consequence of being consumed in greater quantity; would the fact that there is a higher price than 3 *s.* charged in London enable the works to pay more for their coal?—That is a difficult question to answer.

2089. *Chairman.*] You have given some opinion upon the cost of gas within the City of London; I apprehend you do not intend to confine your answer to the boundaries of the City solely, but to take the whole metropolis?—Unquestionably; I take the City as being more under one's personal knowledge, having

having more facts in connection with the City and knowing that the price of gas has been 4 *s.* and 4 *s.* 6 *d.*

2090. Are you aware there is more competition with the Gas Companies within the boundaries, it appears, than in other parts of the metropolis?—There is, I believe.

2091. Is not that caused by the number of Companies that have powers over the streets in London?—It is so.

2092. It augments the cost to the consumers?—Very largely indeed.

2093. Is it your opinion that if the gas were concentrated in one Company, and one direction for the whole metropolis, it would be provided at a very far cheaper rate than it is at present?—If it were so done, then there is no reason why 22-candle gas should not be manufactured; there is no reason why coal gas should not be made at less than 3 *s.* a thousand feet, and cannel gas at 3 *s.* a thousand.

2094. And in that way it would obviate many of the present disadvantages both of price and the inconvenience of constantly opening the streets?—Precisely.

2095. And the leakage in consequence?—It would; it is that that is needed to reduce the price of gas.

2096. Those are the causes that make gas dear in London?—Decidedly.

2097. Mr. Serjeant *Kinglake.*] What is the rate per cent. you pay for your capital in the Manchester works?—It is regulated to about 10 per cent; the profits are estimated at that.

2098. I am not speaking of the profits. Is there any regulated rate per cent. to be paid on the capital?—No, it is not so regulated.

2099. Mr. *Hartley.*] Do you borrow money on the credit of the Corporation?—Precisely.

2100. Therefore the profit is in fact, to some extent, on the credit of the Corporation?—It is.

2101. Mr. *Woods.*] Your estimates spoke of the interest of money paid on the debt, and also the profit which you allowed besides at Manchester?—Yes.

2102. I want to ask you a question, as a practical gas-maker, about the illuminating powers of the different coals. You described the cannel gas as being a 22-candle gas; will you give me the illuminating power of any other standard coals which are to be purchased in unlimited quantities?—There is the Scotch coal, which ranges from 26 to 30 candles, and the Boghead, which ranges from 30 to 36 candles.

2103. Take an inferior kind of coal?—The Newcastle coal will range about 10, or from 10 to 12 candles.

2104. Do you know the Staveley coal?—That is about 13 candles.

2105. It has been stated in evidence before this Committee, that the Staveley coal goes as high as 14 candles?—I have tried the Staveley coal, but I never found it would produce so large a quantity; and besides that the objection I had to its use was that it contained a large quantity of sulphur.

2106. Mr Alderman *Lusk.*] Of course your statement is very interesting, that you can produce gas free from all sulphur, that you can produce it more pure, with less sulphur and less ammonia, with less impurity, at 3 *s.* a thousand cubic feet, giving one-third more light, at one-third less price than our present gas?—More than one-third, I think.

2107. Keep on the safe side, one-third less price, and one-third better. Have you, as a gas engineer, ever studied the supply of coal, from which you can get this gas?—I have no doubt at all of a very large increase in the supply of coal being obtained at the prices I have stated.

2108. The Wigan coal, for example, is there plenty of that cannel coal?—There is plenty of it.

2109. There is abundance for years to come?—There is abundance for years to come.

2110. For generations to come?—Yes.

2111. And is there any cannel coal in any other places?—There is cannel coal in other places too. I can state for a fact that there are districts in Scotland not opened, simply because there is no demand for the coal.

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2112. Mr. *Woods.*] As a gas engineer, you would not advise the Committee, I apprehend, to pass an Act of Parliament that London shall not be supplied with any gas that is not made from Wigan cannel?—Certainly not.

2113. Mr. *Morrison.*] Have you any reason to think that coal will be superseded as a material for making gas?—No.

2114. You do not think gas will be made from petroleum?—I have made extensive experiments with petroleum, but I have found it was inapplicable for the manufacture of gas.

Monday, 30th April 1866.

MEMBERS PRESENT:

Mr. Dutton.
Sir William Gallwey.
Mr. Hartley.
Mr. Serjeant Kinglake.
Mr. Alderman Lusk.
Mr. Morrison.
Sir John Ogilvy.
Mr. Paull.
Mr. Hastings Russell.
Mr. Staniland.
Sir John Trollope.

SIR JOHN TROLLOPE, IN THE CHAIR.

Mr. *Samuel Hughes* was called in; and Examined by Mr. *Karslake.*

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2115. ARE you a Civil Engineer, carrying on business in Park-street, Westminster?—Yes, I am.

2116. Have you, for many years, turned your attention particularly to gas manufacture, and written upon the subject?—Yes, I have, for the last 15 or 16 years.

2117. I believe you have been concerned for gas companies in setting up their lamps and meters, and other matters of that description?—Not for gas companies; chiefly for corporations, and other local authorities in towns.

2118. Had you turned your attention particularly to the gas question before 1860, when the Act was brought in?—Yes, I have, since about 1850.

2119. Did you attend the Committee on that occasion, and give evidence?—I did.

2120. You are aware that Clause 25 provides for the illuminating power, and the mode of testing that illuminating power?—Yes, it does.

2121. Before 1860 was there an Argand burner well known to you, which was commonly in use?—Yes, the Argand burner, commonly used, was perfectly well known to me; but the Argand burner was much going out of use in 1860, and has gone still further out of use at the present time.

2122. Was the Argand burner, which was in use in 1860, of the same, or a different construction from that which has been used since the passing of the Act as an experimental burner?—The construction was very different; the old burner had a much larger central opening, and the perforations in the ring of the burner, for the passage of the gas, were much smaller; those were two very essential variations.

2123. Do you know what burner has been adopted since the passing of the Gas Act?—Yes, I believe, a burner very much smaller in the central aperture, and with very much larger holes for the gas, giving an entirely different result as to illuminating power.

2124. You have here specimens of two different burners, the Argand burner commonly in use before the passing of the Act, and that which has been in use since?—Yes, I have them in the room (*producing the same*). This is the one adopted in the Birmingham and Staffordshire Act. The one used by the companies supplied by Sugg is smaller. They differ in this respect, that the central aperture is exactly half an inch in one, and 44-100ths of an inch in the other, and in this one there are larger holes. The one which gives the highest

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result is the companies' burner, the highest test of gas of low illuminating power.

2125. *Chairman.*] Twelve candles?—It would increase the power of twelve-candle gas to something more than fourteen.

2126. Mr. *Karslake.*] Is that a test which, although it may be a test which is accurately described in the 25th section, is a fair test between the company and the consumer?—I think it is very unfair as regards the consumer, because practically the consumer uses a burner with a much larger aperture, and he does that for this reason, that he cannot burn the gas with those small apertures; the gas would smoke and rise above the top of the chimney. It would be an impracticable burner for the ordinary consumer to use; the consumer never gets the benefit of any of these burners in his gas.

2127. That which you have described as an experimental Argand is one which is used by the companies for the purpose of testing gas from common coal?—Yes; the cannel gas is required by the Act of 1860 to be tested by a totally different burner, namely, by a flat-flame burner, a batswing or a fish-tail.

2128. That burner is not used for the purpose of the ordinary test?—It is not used at present for ordinary gas.

2129. In the experimental use of the burner, you say you can show 14-candle gas, which practically would not be more than 12, when used by the consumer?—I do not think it would be 12 when used by the consumer; it would be 12 by the burner, used for experimental purposes in 1860, but the consumer uses a still worse burner.

2130. He does not get the amount of light which it was anticipated he would get under the 25th section?—He gets nothing like it; it is also affected by this circumstance, consumers use very much smaller burners; now, if they attempt to burn in an Argand only two and a-half feet instead of five, instead of getting a light of six candles they will only get the light of about one, the gas falls off so monstrously in proportion as you diminish the flame; it gives nothing like the same proportion of that amount of light for small flames which it gives for a large one.

2131. By the 25th section the illuminating power of the gas is to give in a certain burner which is described, which is to consume five cubic feet of gas per hour, a light equal in intensity to the light produced by not less than twelve sperm candles; assuming that is carried out and that the light given in such a burner is not less than twelve sperm candles with five cubic feet per hour, supposing you reduce it to two and a-half, what proportion of light would that give, as compared with the twelve candles?—About one candle.

2132. In practice, does the consumer frequently use only two and a-half feet instead of five?—Very frequently, but not in Argand burners; he uses flat-flame burners for quantities of that amount.

2133. Supposing in the Argand burner he does use the whole five cubic feet, what is the consequence?—Then he would get something like 12 candles; not quite so much, because the burner would not be so good, but it would approximate to 12 candles.

2134. Would there be any inconvenience in using that quantity in the burner?—Yes, it is an expensive mode of burning gas, and it is practically of very little use; I have observed in the streets myself, lately, and I cannot discover more than one shop in ten with an Argand burner at all: I am told with reference to works recently erected in the country, that it is extremely rare to have any Argand burners at all; perhaps one or two in the town will be as many as are used; a very large proportion of all the burners are flat-flame burners.

2135. You have spoken of Argand burners as much reducing the illuminating power required by the Act of Parliament, is that by using the burner under the most favourable conditions?—Yes, it is protected thoroughly from all currents of air, from all draughts, and everything of that kind; great pains are taken that the burner shall not be affected by any such cause, and those precautions cannot be imitated by the consumer under ordinary circumstances.

2136. Is it within your knowledge that burners of this description, used as experimental burners, are protected in some way, so as to prevent a current of air from coming, as it would under ordinary circumstances?—They are not only protected by being in a room free from draught, but they are made further objectionable

objectionable by being placed actually in a box by the companies; the whole photometer, the whole bar, as exhibited in this room, and even bars of a hundred inches in length, are placed in a box, so that the surfaces are far too near both to the candle at one end and the gas flame at the other. It is a box perhaps a foot square, or not quite so large.

2137. In this Act of Parliament there is nothing to prevent that. Now, is it within your knowledge that in more recent Acts of Parliament that has been provided against?—The enclosure in a box has never been provided against, as far as I am aware, but the use of an improved burner has been prevented by an Act requiring the burner to be deposited during the progress of the Bill.

2138. That is, a sample burner?—Yes; that has been done in the case of the Reading, Birmingham, Leamington, and other recent Acts.

2139. As regards sulphur in gas, we find it is provided that it shall not contain more than 20 grains of sulphur in any form in 100 cubic feet of gas; in your judgment, practically, is that an excessive quantity of sulphur to be contained in gas?—I think it is far too large a quantity; I think that half that quantity would be a very liberal allowance. I am not so competent perhaps to speak about the sulphur question as some chemists would be, but I know generally what has been said and written on the subject, and I think that many chemists connected with very large gas works, such as Manchester, would advocate a considerably less quantity.

2140. As regard the test for ammonia, is it essential, for the purpose of making that test effectual, that the turmeric paper should be used in a moist state?—Certainly; I am sure no chemist would ever use turmeric paper unless it was moistened previously; I have been in the habit of using it for 15 years, and I have never thought of using it in any other way.

2141. You, I think, in your place of business, are supplied with gas from the Chartered Company?—Yes, the common gas of the Chartered Company.

2142. Have you made experiments for the purpose of testing the illuminating power?—I have made a great many.

2143. In your place of business?—Yes.

2144. What apparatus have you used for the purpose of testing the illuminating power?—A photometer, with a bar 100 inches long, the bar before the Committee being 60, and with one candle at the end instead of two, in a room partially darkened with curtains at each end, and the photometer disc protected by a black surface inside, with every precaution of that kind.

2145. What have you found to be the illuminating power of the Chartered Gas Company; is it equal to the standard?—I have generally found that the Chartered Gas is equal to the standard by the old burner.

2146. The new burner would give more?—Yes, the new burner would give a higher result. I wish to make an observation with reference to that; I say that that new burner is better for poor and weak gas; for instance, the gas of 11 candles by the old burner will be 14 by the new, but at a certain point the burners become equal when gas, for instance, is at 14 candles by the old, the new burner gives a very little higher result; at 14 or 15 candles they become equal, or nearly so; then, for higher gas still, the larger aperture is better than the other, because the gas contains more carbon, and therefore requires more air to mix with it.

2147. With regard to the mode of testing the illuminating power, you know the mode by which it is suggested in this Act of Parliament that the test should be applied—about 1,000 yards from the works, in a room fitted up by the company for the purpose?—Yes.

2148. In your judgment, does that give protection to the consumer for the purpose of enabling him to get the illuminating power prescribed for?—I do not think it gives any protection at all, if the company, or any person employed on their behalf, should be at all disposed to represent the gas improperly. It has been said that, by charging the retorts with cannel coal, the companies can raise the quality of the gas; by a most simple contrivance the quality of the gas can be raised absolutely in one or two minutes.

2149. What is that contrivance by which the quality of the gas can be raised?—Simply by interposing in the service pipe, before it enters the room, a small apparatus containing about a pint, or a small quantity, of photogenic oil,

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or any other oil rich in hydro-carbon, which easily evaporates and mixes with the gas; the apparatus might be prepared beforehand, and a person, stepping out of the room, might simply turn a tap, whereby the experimenter would immediately have the gas raised perhaps five or six candles in value, and he knows nothing about what takes place outside the room where he is testing. I take it to be the same thing as if an inspector of weights and measures were to say to a man, "I am going to test your weights and measures in half an hour," so that the man would have everything prepared for him when he came.

2150. Is that an easy mode by which the character and quality of the gas may be increased in a very short space of time?—Yes.

2151. Have you an apparatus which will illustrate that?—Yes (*producing the same*). This might be attached to a service pipe outside; if it were wanted to misrepresent the quality of the gas, it might be permanently attached. When all these taps were fully turned on the gas would simply pass without being affected by the photogenic oil in the lower part. If, on the contrary, this tap were simply turned to stop the gas, it would pass down this pipe; it would pass the surface of the oil, absorb the vapours, and pass up here charged with the vapours of the hydro-carbon, by which it would be improved the moment that contact took place. This is an apparatus made by the Photogenic Company for the purpose of improving the quality of the common gas, and even for making the atmospheric air inflammable.

2152. Is that apparatus manufactured by the Photogenic Company?—Yes, I believe so.

2153. And is it in practice?—Those and larger ones are manufactured exclusively, and supplied in London and other towns for the very purpose of improving the quality of common gas.

2154. In your judgment, either by charging with cannel coal, or by some such apparatus as that, after three hours' notice, gas might be increased in quality to a very considerable extent?—No doubt of it.

2155. So that the test provided by the Act being under the control of the company, is not a sufficient test to ascertain the quality of the gas?—No; an inspector might be readily imposed upon by any person who chose to do it.

2156. Have you formed an opinion as to what would be the best mode of preventing that in practice, so as to give a fair test to the consumer?—The only mode which would thoroughly protect the inspector from a contrivance of that sort being foisted on him would be, that he should have the control of the service pipe from his burner, where he is drawing the gas to the main in the street. Every part of that should be within his own control and supervision.

2157. And, in addition to that, would it be necessary in your judgment that he should be able to go at any time without giving notice?—Yes; I think going at any time would be necessary to protect him against charging the retorts with cannel coal, because although he could have access to every part of the service pipe, it would not protect him against that; if he were allowed to test without notice, and to have the control of the service pipe, then I think he would be sufficiently protected.

2158. You have told me of the sort of burner practically in use as the Argand burner, in 1860; were you present at the time when the question was discussed as to how the clause should deal with the testing burner?—Yes.

2159. I believe there was a good deal of discussion upon that in 1860?—Yes, there was a discussion on the Bill, which was re-committed; it took place on the last day; a great deal was then said about the burner which the Committee intended to define, being the ordinary consumers' burner; it was understood that the burner then before them was the consumers' burner, but in fact, the consumers' was a still worse burner than that; but the burner they had before them was in no respect better than the one which I have produced here with a central aperture of about ·57; that was the burner which the Committee understood at that time to be the ordinary consumers' burner.

2160. *Chairman.*] With a large orifice?—Yes; and the parties acting for the gas companies were desirous of having the words inserted, "or other suitable burners;" the Chairman strongly objected to that, and it was eventually decided to leave out those words; the Chairman and several other members said that they clearly intended that the burner then in use should be one which for all time

time should be used for testing gas, notwithstanding any improvement which the companies might make in their burners.

2161. Mr. *Karslake.*] Have you in print the discussion which took place on that subject?—Yes; Mr. Baxter, the agent for the company, said, "What I urge very strongly is this: the question here to be considered is this, is our gas of a due illuminating power; surely we are at liberty to develop what is in the gas; we cannot give more illumination than the gas admits of." Then the Chairman says, "That is not the object of this clause; the object of this clause is to provide some term which shall give a standard by which anybody shall know whether you fulfil the terms of the Act; if you put the words 'suitable burner,' you have no such standard;" then the Chairman says in another passage, "Science may enable you very likely to produce better gas at the same expense, or from the same coal; I should be very sorry to limit you there, but, at the same time, it seems to me that if it is ever so imperfect a test ten years hence, still it ought to be maintained, because we are now considering the standard by which you are to try your gas."

2162. Do you afterwards find him saying this, "We start from a very different point, I think: you never ought to have the benefit of any very scientific improvement, because I think that whatever may be the improvements of science, you ought to supply the gas at the same relative value as is intended by the Act?"—Yes.

2163. A further discussion took place as to the Argand burner which was in use?—Yes.

2164. The Argand burner which is described in Section 25 does describe in some respects the Argand burner which was in use in 1860, does it not?—It would embrace the Argand burner then in use, but it would also embrace burners of very different construction, because there is no definition whatever of the central aperture nor of the holes in the burner.

2165. Then after the Act had passed, a different sort of burner was used, which, although it came within the description of the Act, was not the burner which was in practical use in 1860?—A different burner was expressly made for testing purposes, for using with the photometer.

2166. And that you say is an inefficient test so far as the consumer is concerned?—I think so.

Cross-examined by Mr. *Denison.*

2167. Did you hear Dr. Letheby's evidence?—I did.

2168. May I take it that so far as this burner question goes, you agree with him?—I think I differ with him considerably.

2169. You go beyond him?—No; I do not think the Argand burner is, in the present state of gas consumption, a proper test at all.

2170. In that respect you do differ?—Yes.

2171. I think you differ from him in another respect; he said that the difference between the two burners in testing the old 12-candle gas, was, that the old 12-candle gas would be made to appear 13·4?—I think it is more correct to say, that it would make the old 12-candle gas appear 14. That is the result of about 130 experiments which I made in 1864, when the Birmingham and Staffordshire burner was proposed.

2172. You say now, that when you get to 14-candle gas, the two burners are about the same?—I think between 14 and 15; I can refer to the exact results. When gas is about $10\frac{1}{2}$ or 11 candles by an ordinary commercial Argand, the Birmingham and Staffordshire Parliamentary burner will show 14 candle gas. When the gas by a commercial Argand has an illuminating power of more than 15 candles, the large bore burners show the highest illuminating power, and then the Parliamentary burner is not so good as an ordinary commercial burner with a large central aperture. The Birmingham and Staffordshire Parliamentary burner is better than Wright's for gas below 13 candles, but above this quality Wright's burner gives the highest result. Owing to the tendency to smoke, which a five feet flame exhibits in all the small bore burners, it is difficult to try either Sugg's or the Birmingham and Staffordshire for gas of rich quality, but it is probable that when the gas by the stealite or Sugg's burner exceeds 16 or 17 candles, the Birmingham and Staffordshire with a somewhat larger bore will give higher results.

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2173. Going back to 1860, I shall not be wrong in saying that you were the main promoter of the 1860 Bill?—I was the main promoter of the first Bill, which the Committee sent up to the House.

2174. There was only one Bill?—It was re-committed.

2175. Of the Bill which was introduced into Parliament in 1860 you were the main promoter?—Yes; but it was very different from the Bill which eventually passed.

2176. The Bill as a whole was founded upon the districting principle, was it not?—I think it affirmed that the districting under certain restrictions would be desirable.

2177. Having under my eye some evidence which you gave last year, I can put this question to you with some confidence. You and those who acted with you were content to have the districting system, were you not?—With the restrictions that were coupled with it in the first Bill.

2178. You could only ask Parliament to pass such a Bill as you have there?—I believe the delegates were tolerably well satisfied with the Bill which the Committee first passed.

2179. The preamble of the Bill recited the expediency of districting?—I do not think without some limitation, or some words coupled with it. I understand that it recited the propriety of districting with certain restrictions.

2180. Which were to be imposed, not by the delegates as you call them, but by Parliament?—I have not called them the delegates.

2181. It recites that "the companies, instead of supplying gas by several mains in the same districts, had agreed each to confine its supply to a separate district in order to economize their capital, and to avoid the too frequent opening of the public streets; and subject to the provisions and restrictions of this Act, it is expedient that such districting should receive the sanction of Parliament." That was the substance of the preamble, was it not?—Yes, I think so.

2182. What is your opinion of the efficiency of the Gas Act of 1860?—I think it is not efficient at all as far as the testing of gas is concerned.

2183. Is that the opinion that you have expressed within the last few years. When did that view of yours come upon you, that it is not efficient?—Ever since I have experienced the difficulties of proving the gas ever to be below the standard quality, and other matters of that sort.

2184. Have you not within a short time expressed your opinion that provisions of a most efficient nature were introduced into the Metropolitan Act, and that it is the vestries who are at fault?—I may have said that some of them were efficient, and I believe they would have been much more efficient if the vestries had worked the Act properly; still there are very great difficulties in the vestries putting the Act into operation.

2185. Have you not written this: "The case of vestries will be much more difficult, because they have neglected entirely the provisions of the Metropolis Gas Act, which, in spite of all the misrepresentations that have been so lavishly made, was enacted as much for their benefit, if not more than for that of the gas companies."—I believe the Committee so endeavoured to enact it.

2186. I ask you whether you have not written that sentence?—I do not know; will you tell me what you are reading from?

2187. It is the "Journal of Social Science," containing a paper by Mr. Hughes?—I have never seen it in print; I think I had a proof of it.

2188. You corrected the proof?—Yes; I have no doubt it is correct.

2189. You also say, "Wherever Parliament has conferred powers it is at all events desirable that those powers should be fully acted on before the parties possessing them come again to Parliament to complain of their inefficiency; and again, "Supposing complaints are made of low illuminating power and inadequate supply, the question arises, have the consumers or others availed themselves of all the powers already given by Parliament for the purpose of enforcing these necessary conditions in supplying gas; for instance, have they erected apparatus and appointed an officer regularly to test the quality of the illuminating power of the gas; and have they enforced the legal penalties when it has been below the prescribed standard. If none of these things have been done; if no efforts have been made by the consumers to help themselves, and if they have allowed all useful legislation in their favour to become a dead letter, Parliament wisely lends a deaf ear to their complaints, and impliedly, if not directly, announces that the fault is their own, and

and that the remedy is in their own hands;" with a good deal more of the same kind?—Yes; that is implying that the medical officers had facilities given to them to test the gas, and were able, when they found complaints arising, to get them remedied. It appears that they have not.

2190. When did you make up your mind on this subject; I see this book is dated April 1866; when was your paper written?—I think about the end of last year.

2191. I see that last year you were examined upon a Bill for confirming a local order of Stroud, and you were asked by Mr. Phinn, "Have you not been a great gas agitator the last ten years?" and you reply, "I am not aware that I have. That term was first applied with reference to the metropolis. The gas companies were agitators in that case; they chose districts and divided the metropolis amongst themselves, and the parties with whom I acted sought to make an arrangement." Then Mr. Phinn asked you, "Parliament rejected your proposal and adopted the system which you complained of?" and you reply, "Not at all; we supported the districting system with proper arrangements; we were willing to have the metropolis districted, but we wanted to have a regulated monopoly, and not such a monopoly as the gas companies chose to create." Then you are asked, "What has been the effect of it in the metropolis?" and this is your answer, "The effect has been most beneficial; the price of gas has gone down from 4*s.* 6*d.* to 4*s.* in every one of the 13 companies, and one company is charging 3*s.* 9*d.* at this moment; the saving to the consumers has been more than 200,000*l.*, though the Act was so hotly opposed." Then Mr. Phinn says, "Has it not been complained of in certain parishes, and are not parishes under your auspices trying to disturb this arrangement; Marylebone and St. Pancras, for instance?" and you reply, "Not at all; there have been handbills issued by persons who understand nothing about it, talking vaguely about repealing the Metropolis Gas Act, but no parish in the metropolis has dreamed of such a thing; on the contrary, they are too well satisfied; they know the benefits they gain by existing arrangements;" that was all said as late as last year?—I dare say, if you have the date——

2192. It was on 30th May 1865?—Yes; I had reference chiefly to the large reduction, which I did attribute in a great measure to the depositing of accounts by the gas companies and the regulations under the Metropolis Gas Act.

2193. You will admit that Mr. Phinn was fishing for complaints of any description, and that was the answer you gave, that there were people who knew nothing about it who went about talking vaguely and publishing handbills, but that no parish that knew anything of the matter were at all in the mind to disturb the Act of 1860?—I referred to some attempts made at the time to disturb the whole Act for the Metropolis, which I thought were not desirable at that time.

2194. Have you thought since then that it is desirable to disturb it?—I always thought that it was desirable that the Act should be revised.

2195. You kept that entirely to yourself when you were cross-examined last year?—I do not think it was a question about revising the Act.

2196. It was a question about complaining of it?—There were great complaints on the very subject now before the Committee, but there were great benefits at the same time from the reduction of price, although it was extremely irregular and unjust to other parts of the Metropolis where no reduction took place. Certainly, the parishes that have got their gas now at 3*s.* 4*d.*, a reduction from 4*s.* 6*d.*, have had a benefit from it, there is no question; but other parishes that are still paying the highest price are not benefited.

2197. How do you reconcile your statement with what you said last year, that one of the effects of the Act had been to reduce the price from 4*s.* 6*d.* to 4*s.*, and that there was a saving to consumers of 200,000*l.*?—That would probably be one-ninth part of the price of the gas.

2198. That you told Mr. Phinn was the effect of the Metropolis Gas Act?—I believe it to be the effect; still it is very unjust, because several parts of the metropolis have not participated in that reduction.

2199. Again you compel me to ask whether you did not tell the public that the whole of the 13 companies were reducing, or had reduced, to 4*s.*, and that one had gone down as low as 3*s.* 9*d.*; not merely two or three companies, but the whole 13 companies?—I dare say they do all contemplate a reduction.

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2200. But did you not tell Parliament so last year?—Not last year, because the reductions were not announced then.

2201. But you knew they were going to be made?—I do not know that anything was going to be done unless it was announced.

2202. You said, "The effect has been most beneficial; the price of gas has gone down from 4 *s.* 6 *d.* to 4 *s.* in every one of the 13 companies, and one company is charging 3 *s.* 9 *d.* at the present moment"?—"Has gone down."

2203. "Has gone down." Perhaps you were anticipating the event a little?—I am not quite sure when the reductions were announced. If I said that I was probably under the impression that they had been announced.

2204. But you were so certain of it that you thought it worth your while to say it was practically done?—If I asserted that I was under the impression that it was practically done.

2205. I will turn to another thing; these fraudulent contrivances for "fattening up the gas." Do you suggest that any of the companies have ever introduced that contrivance to impose upon the inspector?—I do not say anything of the kind; I only say it can be done.

2206. Probably Dr. Letheby is as well aware of that as anybody living?—I do not know that.

2207. You think Dr. Letheby does not know that?—He knows what the process of the carburetting gas is as practised by the Photogenic Gas Company.

2208. Do not you think, if Dr. Letheby had the slightest suspicion that he had been imposed upon in that way, he would have taken care to have told the Committee of it the other day when he was suggesting various things that ought to be done?—It is impossible for me to say whether that particular mode occurred to Dr. Letheby or not. I know the mode of charging retorts in the way I have described has occurred to a good many people; this other mode is just as obvious; I take no credit for mentioning it.

2209. You say the cannel mode has been notorious for a long time?—No doubt.

2210. Dr. Letheby cannot be ignorant of that. Then I ask you if you have the smallest doubt that Dr. Letheby, if he supposed he was imposed upon in that way, would not have told the Committee that some provision should be introduced into the Act with regard to that?—I do not know that I am called upon to speculate as to what Dr. Letheby would recommend.

2211. You told us about the Bill of 1860 being recommitted; is it not the fact that, after that Bill was recommitted, the delegates published in the papers a recommendation to the public to go on with the Bill?—I cannot at this moment recollect whether there was anything of that kind.

2212. There was some little dissatisfaction among the agitators that it had been recommitted and altered as it was?—I believe there was a great deal of disappointment, because I believe they were very well satisfied with the first Bill. The first Bill kept the price down until the standard got up to 15 candles. The first Bill provided a permanent inspector, under the authority of the Secretary of State.

2213. Did not the Counsel for that Bill tell the Committee that they were adopting more in consequence of your suggestion than the House of Commons was at all likely to follow up?—I never heard it; I have no recollection of it.

2214. You are quite sure of it?—I am quite sure of it.

2215. On what grounds was it that the Bill was recommitted by the House of Commons?—That I do not know indeed why it was recommitted.

2216. You do not know the reasons that were given in the House for recommitting the Bill?—I have no recollection of them.

2217. You read them at the time?—I may have read them, or I may have not.

2218. I will try if I can bring you to recollect them; you say there was a disappointment on account of the Bill being altered?—There was.

2219. Do you remember that after that disappointment there was some discussion among the promoters of the Bill whether they should go on?—It was discussed, I have no doubt.

2220. Now we are beginning to get to the point; cannot you carry your recollection one step further, and tell me whether letters were not written to the newspapers to tell the consumers to be content with the arrangement on the ground

ground that it was of great benefit to the metropolis?—I am not sure of that, but I think they were quite right if they were inserted.

2221. And it has been of great advantage to the metropolis?—I think it has in the reduction of the price, but the reduction is not uniform.

2222. I have not asked you anything about sulphur; did you take any part in the sulphur discussion in 1860?—I do not think I did.

2223. You have extended your inquiries into a great many places, do you happen to know anything about the amount of sulphur in the Newcastle-upon-Tyne Gas?—I do not know positively; I know some gas that is said to be free from sulphur, such as the Manchester gas.

2224. Do you know any that is not free from sulphur?—I know that the metropolis gas contains more sulphur than the provincial towns.

2225. I am asking you about the Newcastle gas?—I do not know about Newcastle.

2226. Do you know about the Liverpool gas?—I believe the gas at Liverpool contains very little sulphur indeed.

2227. Have you examined it yourself?—I have not, for sulphur.

2228. Nor Newcastle?—No.

Re-examined by Mr. *Karslake.*

2229. I understand you to say that you were one of those who advocated the districting principle in 1860?—Yes, with certain regulations.

2230. I suppose, the Bill when it came out of the Committee, did not contain all the regulations?—I do not think the first Bill did contain all, but there was a clause in the first Bill that was extremely useful, for provisions were inserted by the Committee at their own instance; I believe the clause empowering the Secretary of State to exercise supervision over the companies.

2231. I suppose the delegates would have preferred the provisions in the first Bill, rather than those in the second Bill?—One thing was practically to lower the price, because it sanctioned no rise of price till the gas reached 15 candles; that was one important thing. Then the provision by the Secretary of State was another important thing. Those were the two principal differences between the first Bill and that which was passed on re-committal, and I believe there were other things besides.

The *Chairman* said they had better not examine the Witness as to anything not in the Act.

2232. Mr. *Karslake.*] Now, as regards the districting under proper regulations, are you still in favour of that?—Yes; I think the districting confining a certain part of the metropolis to one company, with one line of mains through the street is decidedly better than having a multiplicity of mains through the same street, provided always the one company is placed under stringent restrictions, which certainly I think they ought to be.

2233. And those stringent restrictions you have pointed out to the Committee now?—Yes.

2234. A question has been put to you about this Photogenic Company, and the instrument which you have shown, you do not say that in any instance, so far as you know, that has been used by a gas company for the purpose of "fattening up the gas," as my learned friend terms it?—I should be very sorry to charge any company with having done it; I only say it is possible to do it.

2235. You said that for the purpose of showing that unless the testing room is under the control of the gas consumer, that sort of operation may be performed which will enable the gas to be made better than it otherwise would be?—No doubt it is very unsatisfactory for the testing officer to go and test gas, unless he is satisfied that he is testing a genuine article.

2236. In your judgment, ought the test to be done by some competent person, without any assistance being derived from the gas companies at the time?—I do not see what assistance they can possibly give him; he has his own place to test in, and his own apparatus to test with.

2237. With regard to the sulphur question, you say you have not gone into that particularly?—I have not particularly; I have burned gas for the purpose of collecting the products, and have tested for sulphur occasionally, but I am not qualified to speak as to the presence of sulphur in the London gas.

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2238. One word about the price, you say it has gone down from 4 *s.* 6 *d.* to 4 *s.*, does that apply to the City of London as well as to the rest of the metropolis?—My impression is that the City of London pays 4 *s.* 6 *d.*; in other districts the consumers are paying 3 *s.* 4 *d.*

2239. Then they are unequal?—They are extremely unequal in that; they range between 4 *s.* 6 *d.* and 3 *s.* 4 *d.*

2240. It is the fact that in some places while they are paying 3*s.* 4*d.*, in other places they are paying 4*s.* 6*d.*?—I paid 4 *s.* 6*d.* in my last gas bill.

2241. Then you were not a true prophet in saying there would be a reduction in the price?—If I said the reduction was then actually in operation, I went too far; it appears it has not been made; I believe my last bill was 4 *s.* 6 *d.*, paid since Christmas.

2242. Mr. *Dutton.*] You said it was possible for the gas company to manage the gas in such a way that it should show greater illuminating power; I suppose it would be possible for the inspector to do something to the gas which might diminish the illuminating power; I put it merely as the converse of your proposition; I suppose if one man can do it another can?—I could not say it was impossible.

2243. I do not say that either would do it, but I say if one would play tricks with the gas the other would?—The inspector could do nothing beyond mixing atmospheric air, or carbonic acid with the gas.

2244. If the test was left entirely to the inspector, gas companies might then say it was not a fair experiment?—That is if the inspector was a man capable of doing such a thing as that.

2245. But you put a possible case on the part of the company, and I put that to you as a possible case on the part of the inspector?—But I think there would be this great difference, that the inspector must prove his case—must give his evidence on oath; whereas in the case of the gas being bad the persons who manipulated it for the gas company would probably not be called at all; there would be a considerable difference between the two cases; it might be done by some officer of the company who was scarcely responsible for what he was doing; it might be the act of some mere underling to hide some fault of his own.

2246. I do not say it would be done in either case; I merely put the bare question as a fact that it might be done by somebody on either side?—Generally speaking, I think, the answer to that would be "Yes."

2247. Mr. Alderman *Lusk.*] You are well acquainted with the old burner?—Yes, I am.

2248. And you know something about the new burner as well?—I do.

2249. The public, I understand, buy gas from the companies, not light?—I should rather say they buy light.

2250. Do they buy gas and pay for it through the meter?—They buy gas and pay for it by measure.

2251. They buy it from the companies, and burn it as they please?—They burn it as they please.

2252. In the burners?—Quite so.

2253. According to their own fancy, in a fishtail burner, an Argand burner, or in what burner they like?—Quite so.

2254. Do you tell me that the new burner which the companies have substituted for the old one produces more light with less gas?—Produces more light with the same gas; it would not produce more light with less gas.

2255. Do you mean to tell me that the new burner which the company has substituted for the old burner produces the same light with less gas?—It would produce the same light with less gas, or more light with the same gas.

2256. Then it would not be of the same money value; the public would have to pay 14*d.* for the quantity of gas that the Act intended them to pay 1*s.* for?—It would be in that proportion; if 14-candle gas were substituted for 12-candle gas, the price would vary in the same proportion.

2257. I merely put it hypothetically; then the gas companies come in rather a questionable shape before us now?—Yes, in the shape of having altered the burners since the Act was passed.

2258. Now, looking at this difficulty of dealing with the burner, is there any other test that you would suggest to try the gas; I do not mean to try the light, because if people go and buy flour, they may make it into bread or puddings, or

do what they please with it; and so, if the public buy gas, they may burn it in an Argand, a batswing, or a fishtail burner, in any way they choose; they put on what force they like, because they pay for it by meter; is there any other test than by the burner?—I think a flat-flame burner is subject to far less modification than the Argand; I find that for small quantities of gas the illuminating power does not go down in the flat-flame burner in anything like the same proportion as it does in the Argand; there are fewer circumstances to be altered in the flat flame than in the Argand burner, which is capable of indefinite alteration.

2259. That is not what I mean; you know tallow will produce light; we are able to judge of the quality of tallow without burning it; is there any test that we can apply to gas, without burning it?—Yes, chemists are very much in the habit of testing gas, independently of burning it, altogether by a chemical test; they ascertain the per-centage of hydro-carbon in the gas; that is purely a chemical test; when it is properly applied it is convertible into candles, therefore the chemist does not require to ascertain the quality of gas by burning it at all; he can ascertain it chemically by the bromine process, by means of the Cooper's tube; if a certain quantity of gas is to be compared with a candle, I think the present standard of 5 feet is far too high, because consumers do not use 5 feet in their burners; it would be far more equitable to define the light to be given, by saying $2\frac{1}{2}$ or 3 feet an hour in a flat-flame burner; or the French method might be used, in which a Carcel lamp, giving about the same light as 5 feet of gas, is employed as the unit of comparison; therefore their test is always much better than ours.

2260. Do you think that there is any serviceable chemical test that you would use for this purpose?—I would not recommend the bromine test to be set up in opposition to the photometer, although it is highly satisfactory to many chemists who do use it.

2261. Then, speaking in reference to the present Act, you think three hours' notice should not be given?—I think the three hours' notice defeats the whole object entirely.

2262. You mean it should not be in the power of any body to use any apparatus—not that he would do it, but you think that it should not be put in his power?—Quite so; it should not be put in his power to adopt a contrivance which would entirely defeat the operation of the test.

2263. In your experince, going about London, have you heard many complaints of the present Act?—I have heard many complaints from consumers, undoubtedly, as to the quality of the gas and the falling off of the gas.

2264. Do you think there is any ground for complaint on the part of consumers against the present Act?—Yes; I think the great ground, so far as the illuminating power is concerned, is that the present seems to be a very uncertain and variable test, and one exceedingly difficult to prove, or to enforce any penalties with respect to it.

2265. You think it is not a good Act?—I think it is unsatisfactory in that respect, and I think the consumer has also just reason to be dissatisfied with it, because he does not understand the test; in using the Argand burner he does not understand it.

2266. Mr. Serjeant *Kinglake.*] I understand you to say that the Argand burner, as defined by the Act of 1860, is, in your opinion, not a good test burner?—I think not.

2267. Then will you state to the Committee, according to your present experience, what is the best test burner that you would suggest?—I would suggest a burner consuming not more than three feet an hour as a proper unit, because it corresponds more generally with what consumers use. I would have a flat-flame burner; that kind of burner is not subject to the same variations as every kind of Argand burner is. I would either take a test of that sort, or I would take the French test, the Carcel lamp, consuming so many grains an hour, and giving a light equal to five feet per hour. The French standard is this: it is either unity, which means the exact light of the Carcel lamp, or it is sometimes 1·1, being one-tenth more than the Carcel lamp; but the general principle is, that the unit gives as nearly as possible the light of five feet. That standard seems much fairer, because equal lights are at once compared by placing the disc in the centre of the bar. The photometer involves a multiplication; you must have the disc very much nearer to the candle than to the

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gaslight, and the divisions become very small indeed when you come to either end of the photometer bar. One candle is represented by a space of perhaps one-eighth of an inch long; if you have equal lights, you would have the disc in the centre, and it would be much better to have the disc in the centre than to have the small light at one end, requiring also the disc to be placed where the divisions are very small.

2268. I do not know whether you heard Dr. Letheby's evidence, in which he said that it was very essential that whatever burner you have when testing, it should be the same burner for all companies, and very strictly defined in the Act?—I am not quite sure that I should like the same burner for all companies, because the burner should vary according to the quality of the gas.

2269. I mean in these London districts?—It is desirable there should be one strictly uniform burner for London for all the gas companies.

2270. Mr. *Morrison.*] Do you know if in such testing houses as have been provided by the local authorities, the surface pipe connecting them with the main is under the control of the testing officer?—I should say from all my experience that I have seen of testing apparatus erected by companies, that it is essentially not.

2271. I mean those provided by the vestries?—If provided by the vestries in their own buildings, it would be very easy to expose the whole of the surface pipe throughout the whole of its passage from the works.

2272. There is nothing in this Act to compel it to be done?—There is not.

2273. And there is nothing to prevent it?—Nothing whatever.

2274. Mr. Serjeant *Kinglake.*] Have you heard of the American burner by Richardson Brothers; will you just look at that card and tell me whether that is new to you (*handing card to Witness*)?—I do not know the particular burner, but it seems to me to describe something very like that we have already; the fish-tail burner, where the two streams of gas cross each other.

2275. These are by a circular aperture?—A circular aperture.

2276. These are more by batswing?—Exactly; but there may be two flames from the batswing that cross each other, just on the same principle as that adopted in the fish-tail burner.

2277. *Chairman.*] It has been suggested that you be asked whether a private consumer of gas would not be entitled to make use of this apparatus, so as to increase his light, if he wished to improve his gas on his own premises?—No doubt he would; but the defect of most of these apertures for making carburretted gas is that it is very expensive.

2278. It would add to the expense, but would it add to the explosive properties of the gas in any way; would there be any danger in using it in shops?—There would be danger undoubtedly, because if one of these vessels were dropped and it took fire, it would lead to serious consequences.

2279. Mr. *Paull.*] What are these contrivances used for?—They are used by consumers who want to have a light for a particular purpose. I may tell you that the Photogenic Company send them out to ball-rooms, and places of public resort, to make a brilliant illumination. They send a great many abroad, where coal is very dear, and where it is expensive to make gas of any kind.

2280. Mr. Alderman *Lusk.*] This is got up by a company?—I think it has the badge of the Photogenic Company.

2281. Is it an American invention?—The Photogenic Company was originated by a Frenchman.

2282. A limited liability company?—Yes.

Mr. *Tom Abercrombie Hedley,* Examined by Mr. *Webster.*

Mr. *T. A. Hedley.*

2283. ARE you a Gas Engineer?—I am.

2284. Have you been carrying on business many years?—I have.

2285. Are you the contractor for the supply of gas to a great number of companies?—I am contractor for the supply of gas to Uxbridge, and I am the lessee of some smaller works at Wallingford and Southam.

2286. *Chairman.*] When you say you are the contractor for the supply of gas, do you mean that you put up works?—No. In Uxbridge I supply the gas company with the gas that they sell.

2287. You manufacture gas for them?—I manufacture and supply it to the consumer.

consumer. The gas company have the meters, and pay me for the quantity of gas the consumer would have to pay for.

2288. Mr. *Paull.*] Are the works theirs or yours?—The works are the property of the company, I find the coal and labour.

2289. *Chairman.*] You do the manufacturing?—I do the manufacturing.

2290. You farm the works, in fact?—Yes.

2291. Mr. *Webster.*] You speak of being the contractor for the supply of gas. I understand you make the gas at so much the 1,000 feet, and supply it to the company?—That is so.

2292. I believe you have been consulted by a great number of companies in different parts of the kingdom?—I have been consulted for the last 25 years by some of the largest companies and corporations of the kingdom.

2293. One question about Uxbridge; I think you said you supplied the gas in Uxbridge?—I supply the gas to the company.

2294. What coal is used there?—Newcastle coal; the same coal the London companies use; that is, I purchase coal in the River Thames and send it up to Uxbridge by boats.

2295. I believe Uxbridge is one of the places referred to by Dr. Letheby as being supplied with better gas than London?—It is; I was pleased to see it; the Doctor was down at Uxbridge about six weeks or two months ago for the local board, and he tested my gas, and I am glad to see him report so favourably on it.

2296. I believe you were a witness on the inquiry into the Gas Act of 1860?—I was.

2297. Has your attention been called to the fact of the standard burner for testing there referred to?—My attention has been drawn to it for this reason, that in giving my evidence in 1860 I especially gave it in reference to the burner that was then in use for testing gas; and I believe I was mainly instrumental in inducing the Committee on the Burning of Gas Bill to have the burner then defined, because I found after the passing of the Act of 1860, that a different burner altogether was introduced, and that when gentlemen were called on by the Corporation of London, or by other parties, to report upon gas, they reported that the gas was of a certain quality, and it was no such thing, because they were reporting upon a different burner from that which the Committee intended should be used; so when the gas was reported to be nearly 14 candles in quality, it was in fact only 12-candled gas; I took the matter up publicly, and I believe I was mainly instrumental in inducing the Committee to define the burner in the Birmingham Gas Act.

2298. I may take it as the result of your experience that to the burner recently introduced is due the fact that the gas appears to be of improved quality?—That is so; whenever the gas is tested by the new burner it makes the gas purer and of better quality than it did in 1860.

2299. I think you were present when the discussion took place before the Committee of 1860, just referred to by Mr. Hughes?—I was not present at that; that was just after the Bill was committed.

2300. Having reference to what took place, in your opinion ought that deviation from the Act by the construction of this new burner to have been allowed?—It ought not to have been allowed; and then when it did take place the tester ought to have stated in his report that although the gas was 14 candles by this new burner, that it would have been only 12 candles by the old burner; if he had stated it at the time it would have got rid of the difficulty.

2301. Whatever may have been the intention of the Act of 1860, as regards this testing, has it been successful?—In my opinion not as regards the consumers; it has been quite successful as regards the companies.

2302. Do you apply that answer with reference to the quality of the gas?—With regard to the burner.

2303. *Chairman.*] With regard to the illuminating power?—With regard to the illuminating power. The gas companies have taken the benefit due to an improved burner, and ascribed it to the gas, whilst it was merely due to the burner, and not to the gas at all.

2304. Mr. *Webster.*] What is the burner in general use by consumers?—The burners that are almost universally used are known as the bats-wing burner and the fish-tail burner.

2305. Has the Argand burner almost gone out of use?—The Argand burner

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is very rarely used now, except for experimental purposes, or for large private rooms.

2306. Having reference to the experience you have had of the working of this Gas Act, do you think there ought to be a standard burner deposited?—I think there ought not only to be a standard burner deposited, but I think if the Committee are going to define the gas now they should take the gas of 1860 as the starting point; then, the burner should be defined from that gas; that the gas at that time was 12-candle gas by the old burner, therefore the new burner should be made to commence at the 12 candles of 1860, not from the 14 candles of the improved burner of 1866, otherwise if the Committee were to start upon a 14-candle gas by this improved burner we are only where we were in 1860, that is, we are commencing with 12-candle gas again.

2307. Then I understand you to say that you are of opinion that there should be a standard burner deposited, and that the burner should be of a different kind?—Most certainly.

2308. Has the consumer any adequate means for having gas tested at present?—I can only answer that in this way: I am a consumer in the City of London and in St. John's Wood; I should be very glad to know how I could make the gas companies supply me with good gas in St. John's Wood.

2309. Mr. Serjeant *Kinglake.*] What company is that?—The Western.

2310. Mr. *Webster.*] Do you find there is a difference in these two cases, the Western and the one you have in the City?—The one is said to be cannel coal gas, the other is only Newcastle coal gas, but in the comparison of gases in my houses in the same road, which is fairer than comparing it with the City, which is very weak; there are two companies in my road, the Western Gas Company and the Imperial Gas Company; the one charge 5 *s.* 6 *d.*—they were 6 *s.* to the 1st January; the other charge 4 *s.*, and the 4 *s.* gas is quite equal to the 5 *s.* 6 *d.* gas; and although the pipe of the 4 *s.* gas is within 50 yards of my houses, I cannot get it.

2311. Mr. Serjeant *Kinglake.*] Which do you prefer to burn?—I prefer to burn the Imperial gas at 4 *s.* to the Western gas at 5 *s.* 6 *d.*

2312. *Chairman.*] Do they call that cannel coal gas?—They call it cannel gas.

2313. Mr. *Webster.*] One more question about this test: you say, as one of the public, you have not adequate means of testing the gas or compelling the companies to give you good gas?—I have not, and the vestry have not appointed any inspector, and if they had it would have been of no value, for you are bound to give three hours' notice before you can test the gas, and by that time they can make 10-candle gas into 30-candle gas; I gave evidence last Session before the Birmingham Committee upon this question, and the eminent Mr. Hawksley was the single witness on one side for the gas companies; I was called for the Birmingham Corporation, and I then proved that in a quarter of an hour the gas might be altered for five or six miles; I know it is disputed by Mr. Hawksley, Mr. Barlow, and Dr. Letheby; but about two or three months ago Dr. Letheby was sent for to test my gas at Uxbridge; it was a good opportunity, I thought, to convince him; and whilst he was on the works I converted 12-candle gas into nearly 15-candle gas in less than the space of a quarter of an hour; I thought I could not do better then when I had got him on the spot to convince him.

2314. *Chairman.*] Did you tell him what you were going to do?—He was then testing the gas; he said, "Your gas was only 12½ candles while I was in the town, and now it is 14." I said, "Doctor, you said we could not alter the gas, and I have taken advantage of your being here and have done it."

2315. Sir *John Ogilvy.*] Did you receive any notice?—I received a six hours' notice, and I was quite prepared for him when he came.

2316. Mr. *Webster.*] Without going into the tricks of the trade, do I understand you to say, as a manufacturer, that there is no question that the illuminating power of gas may be increased by three or four candles in a very short time?—Except that it is not a trick of the trade.

2317. Mr. *Paull.*] Is it an expensive process?—No; we always keep cannel coal at the works to destroy naphthaline. There is only one mode of destroying naphthaline, and we occasionally send in a charge of cannel coal into the pipes to clean it out.

2318. *Chairman.*] If you used cannel coal you would not require that process?—No.

2319. Mr. *Paull.*] Do you say that the increased illuminating power depends upon clearing the pipes?—No; we always keep cannel coal in stock to clean the pipes, and having had six hours' notice, and having Dr. Letheby on the works, I wanted to convince him that the illuminating power of the gas could be increased, and, I think, about three weeks afterwards, when the learned counsel came to the works, in five minutes I raised the quality of the gas by two candles.

2320. *Chairman.*] Was that at Uxbridge also?—It was at Uxbridge also.

2321-2. Did you inform Dr. Letheby of the process you were doing it by?—Immediately he discovered by the photometer that the gas had risen in quality, I suggested to him that he should examine my three gas-holders with the valves leading into the gas-holders and the valves leading out into the town, and have all opened. I was not making gas exclusively for him, but the town was receiving the gas he was then testing.

2323. You did not persevere in that after he was gone?—No; I am under a contract to supply 12-candle gas.

2324. Mr. *Webster.*] Do I understand you to say, as to the result of your experience as a gas manufacturer, that if testing is to be adequate, there ought to be no notice?—Distinctly.

2325. *Chairman.*] Your ordinary quality at Uxbridge, it appears to me by the return I have in my hand to be 12·48?—I am bound to supply 12-candle gas, and the Doctor found it in the town, before I knew he was testing, that the quality was 12·48.

2326. That is his return?—That is his return.

2327. Is that your ordinary strength?—I presume so; I rarely go to the place, but the photometer is always at work, and I give any non-professional man, or any one not connected with the town not a professional man, leave to go and test the gas when they please.

2328. Is there any inspector there?—There is no inspector; the local board employed Dr. Letheby for the purpose.

2329. Then we arrive at one condition, that there should be no notice?—That there should be no notice; more than that, a consumer should have the right of testing the gas in the presence of any well-known chemist, without giving notice to the gas company.

2330. As regards the number of times during the hours of consumption that a consumer should have the opportunity of testing the gas, ought he to be able to do it at any time?—The gas ought to be tested during the hours of consumption, during the time it is in use. The present system, I believe, is to test it twelve hours, and they take the average; so that during the time the consumer is not using the gas he may be getting gas of very high standard; during the time the draft is on the pipes, between seven and nine or between eight and ten, it may be a low illuminating power; but by taking 10 experiments and reporting the average, the consumer is really burning weak gas, although he is getting the credit of having the average gas.

2331. Is it consistent with your experience that gas of a very different illuminating power is supplied at different times?—It is so; and I feel it especially with regard to the Western gas, for this reason: I had my house fitted up entirely with gas, I have not a candlestick in the house, all the burners in the drawing-room and the other rooms are what we call three-feet burners; they are burners made for cannel coal gas. Occasionally, during the middle of the evening, it is as if a cloud passed over the gas, and for some time we do not get light enough; that is, the illuminating power of the gas has become deficient.

2332. *Chairman.*] How do you account for that?—I have, after giving it a good deal of thought for some years, arrived at the conclusion that it is owing to two or three reasons—three reasons—the use of clay retorts, the use of oxide for purification and the use of exhausters for pumping the gas out of the clay retorts; the clay retorts are liable to crack, and have breakages in them; a retort being broken is not discovered until they take the coke from it, therefore all the while the retorts remain in a state of breakage the exhaustion is being at work; I believe they draw the products of combustion from the retorts, and that gas is carried away with the carburetted hydrogen, and that the oxide has no effect upon it; it will not purify it in any way, and that gas is sent to the consumers, and it not

Mr. *T. A. Hedley.* not only has the effect of destroying the light that would be given by the ordinary gas, but the consumers have to pay for it.

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2333. Mr. *Webster.*] You tell us that gas of different illuminating powers is supplied at different periods of the hours of consumption; do you find on Saturday night particularly that the gas is of inferior illuminating power?—No; not on Saturday, not as regards the Western.

2334. Do you find it so in other gas?—I very rarely go out in the evening now.

2335. In addition to those other protections to the mode of testing, do you conceive it should be made by a public officer?—Yes; I think there ought to be a public officer, and it ought to be compulsory that there should be a public officer for each district, and as Dr. Letheby says, there should be one superior officer over the whole of them; but I would make this suggestion, instead of its being made so scientific a matter as Dr. Letheby recommends, I would recommend that the testing should be so simple that any one could do it, for really at present any of my workmen can go and take a test with the photometer, and they can go and test the gas for its purity; I would not make any alteration that would make it necessary to have experienced or scientific men to take the test.

2336. Then you think the test is really a very simple operation?—It is very simple, and I would undertake that a dozen men should experiment upon gas in London and in a dozen different places, and if they will have the same apparatus that their experiments shall tally; but where they differ at present, if I am testing gas at one part of London and Dr. Letheby at another, he uses a different burner from what I should use; he has a variety of contrivances by which he tries to give an artificial quality to the gas. I take the burner used in 1860, and I use nothing but the apparatus strictly in use in 1860; therefore our experiments when published would be different.

2337. Now, as regards the period of the day at which the tests take place; what is your opinion upon that?—With regard to the period of the day it might take place within 24 hours; but with regard to the illuminating power I think it should be confined to the hours of burning.

2338. Mr. *Paull.*] That is the night?—That is the night.

2339. Mr. *Webster.*] You say this testing should be made in the evening and by a public officer; should the testing be registered?—Yes; they should register every testing and not report the average; if they take ten testings during every evening, those ten testings should be entered in a book, not as in the present system, the average result.

2340. Does that taking the average testing involve a fallacy?—Certainly; because if you have three hours when you are getting very bad gas, and one hour when you are getting very good gas, it would be made to appear that you are getting an average of the gas; it is not so, because you are paying for the bad gas during the hours you are using it.

2341. If these suggestions are carried out, do you believe the companies would be compelled to supply gas to the consumers of a standard illuminating power?—I think so; from my own knowledge of the gas companies, I think if the system was once laid down that they would carry it out fairly; the only reason at present why the companies do not, is because they have no system to carry out.

2342. One question on the purity of the gas. What is the purifying medium usually employed now?—In the provinces it is mostly lime; for the last few years in London, they have ceased to use lime, and adopted the use of oxide of iron. Since that time, the gas has deteriorated both in quality and purity.

2343. Then I understand from you that the lime process is a much better process than the oxide of iron if it can be adopted?—It is a much better plan by itself, but it can easily be adopted in combination with oxide, and that without requiring any additional space, as has been stated here; they have only to make the purifier twice the depth; the purifier is a cast-iron vessel, with sieves laid in it; they have only to increase it that depth, and have one half the sieves for the oxide and one half for the lime, and it would take up no additional space. But since 1860 the consumption of gas has increased one-third, and the companies make their gas so much quicker than they did, that they do not give it time to remain in the purifier and become thoroughly purified. Then the oxide will not touch the carbonic acid and other gases, which the lime would

would take up. If each company would have merely one or two trays of lime, they would take up the great part of the impurity, which the gas now possesses.

2344. You have explained to the Committee the way in which the carbonic acid and other gases may be drawn into the retort; I think you say the carbonic gas so brought in will not be purified?—Carbonic acid got into the gas will not be purified by means of oxide of iron.

2345. Is it a fact that gas, as supplied, contains carbonic acid?—It is.

2346. Is that one of the impurities which you complain of?—It is one of the impurities that deprive gas of its illuminating power.

2347. What are the other impurities which you find in it?—Sulphur and ammonia; I tested the gas of two companies within the last few days, and I should say that the one has a large amount of sulphur in it, and is overcharged with ammonia; in the other, I did not find sulphur, but there were strong symptoms of ammonia.

2348. Mr. *Denison.*] You should give us the names of these companies as we go along; you did not find sulphur in it?—I found sulphur in the Western, and overcharged with ammonia.

2349. And what is the one you did not find sulphur in?—I did not find it in the Chartered, but I did find ammonia; I found it by a strong test. On Friday evening I went into a chemist's shop and asked him to make me a mixture of nitrate of silver; he took that test for my information (*showing a piece of paper to the Committee*) in his place, without nitrate of silver, which ought not to turn to that colour. I then went to my own house, and tore a piece of paper in two; I took one drop of the nitrate of silver; I put half the drop on that piece of paper and the other half on that—the one is a test of nitrate of silver with the atmosphere, the other with the Western gas; then I took the Chartered, and I presume the difference of colour is owing to the difference between the atmosphere of St. John's Wood and of the City.

2350. *Chairman.*] They are similar?—There is no sulphur here; the Chartered gas is purer than the Western.

2351. They are upon similar paper?—All upon similar paper, the drops divided; that is merely the effect of the atmosphere upon the nitrate of silver in St. John's Wood, and that is the effect of the gas upon the nitrate of silver in the City; one has been held a minute and a-half over the Western gas, the other has been held the same time over the Chartered.

2352. Mr. *Paull.*] What is it causes the chemical action?—The sulphur on the nitrate of silver. Then, if I hold these two papers in a stream of gas, it will turn that paper a blood red, and turn the other a most beautiful purple. In the City, it only slightly discolours it, but the Western gas turns that a blood red and the other purple.

2353. *Chairman.*] Is that from ammonia?—This one is from ammonia.

2354. Mr. *Webster.*] Will you explain what are the particular impurities and the particular tests you have applied to them?—I stated it was a very strong test.

2355. What does it show?—The nitrate of silver shows sulphur.

2356. Mr. Serjeant *Kinglake.*] Does it show the quantity at all?—No.

2357. It only shows the presence of sulphur?—It only shows the presence of sulphur; it is a very tedious experiment to take the quantity, and it is quite a chemist's work.

2358. *Chairman.*] Is the silver diluted?—It is a weak solution.

2359. The same solution applied to all four papers?—The same solution applied to all four papers.

2360. Mr. *Webster.*] You say you could not tell the quantity, but can you form any opinion as to the quantity?—No; I should think it would be something like 24 or 25 grains.

2361. As regards the quantity of sulphur that should be permitted to be found in gas, what is your opinion upon that?—At the request of one of the directors of the Great Central some short time since I made a communication to the directors, and I volunteered to put them in the way of supplying their gas, that it should not contain more than five grains in 100 cubic feet. They asked me to examine the works, which I did; they informed me they were trying some particular important experiments, and therefore they would decline to entertain my question; I found those important experiments resulted in the 21 and 22 grains getting up to 28 or 30 grains.

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2362. Then I take it to be your evidence that gas might be supplied to the consumer not containing more than five grains of sulphur in 100 cubic feet?—Yes, and that the maximum ought not to exceed 10; at my small works at Uxbridge, without any scientific management, Dr. Letheby found 13 grains in it.

2363. With ordinary management, such as gas companies ought to be subject to?—We have no management; mine are only working men, but with the London management they ought not to exceed five, and the maximum ought not to be more than 10 grains.

2364. Now, I think, ammonia is another impurity that is often found in gas?—Ammonia is an impurity; but by itself it is not a very injurious one; it is in combination with sulphur that it is injurious; but by itself we should not very much object to it.

2365. Carbonic acid?—Carbonic acid is an injurious gas; it is injurious in several ways, but it is specially injurious upon the effect of the illuminating power of the gas.

2366. You have mentioned two modes of purifying; the lime process, and the oxide of iron process; do these processes require any difference in the pressure under which purification goes on?—Oh, no.

2367. The pressure is the same?—The pressure is the same.

2368. Do they materially differ in expense?—No, I should fancy there is no great difference in the expense; the oxide is the most economical.

2369. In addition to the effects upon illumination due to impurities, do you find a deficiency in illumination through want of pressure?—No, because I think what people very often fancy to be a want of pressure is the mere effect of carbonic acid passing over with the gas; it has the appearance of want of pressure; directly the carbonic acid gets to the burner the flame falls off, and the light is apparently gone; the same pressure is there, but the gas is so much heavier than it is, in fact, and it is only an apparent want of pressure.

2370. In this state of things, is the consumer led to employ a much larger amount of gas than would be necessary?—It is so; he introduces larger burners, and he consumes a larger quantity of gas than he otherwise would do. He does not get the benefit from it, all he does is to burn a larger quantity of gas, and to get a smaller quantity of light, and he introduces a large amount of the products of combustion, which injures his furniture or destroys his goods.

2371. Mr. Alderman *Lusk.*] It is not gas at all?—It is not gas at all.

2372. Mr. *Webster.*] The result is this, that being anxious for more light, he burns more gas, and does not get the quantity of light he ought to do in proportion to the quantity consumed?—It is so.

2373. Is it the fact that that increased quantity of products of combustion tends to destroy the gas?—That is so, because the products depend upon the quantity consumed.

2374. Is the present system of distribution as regards the way the mains are laid objectionable?—They are only objectionable to this extent: many of them have been laid for many years without any supervision. I believe some of the companies do not even know where their pipes are laid, they are so badly laid. If you see the ground opened in any part of London, you find it saturated with the products of the gas; it has become black, and there is a very disagreeable smell when the pavement is opened.

2375. Has your attention been directed to the question of laying mains in subways?—I have turned my attention to it for 25 or 26 years.

Mr. *Denison* objected to the question.

The *Chairman* stated, that the Committee were of opinion that the question might be put, as it arose out of the question of the escape of gas, and it gave rise to the alternative whether the pipes would not be better in subways than as they are laid at present under the streets.

Mr. *Webster* said, no doubt it was more connected with the question of costs.

The *Chairman* said, they had better not go into it at present.

2376. Mr. *Webster.*] I believe, Mr. Hedley, you are prepared to give evidence on

on the question of costs, and of the public lights, which we shall have another opportunity of calling you upon?—I am.

2377. I have only one more question to ask you, Mr. Hedley; you told the Committee, in the course of your examination, of the experience in your own consumption; are the two companies the Chartered and the Western?—Yes.

2378. In addition to what you have already explained, with reference to the supply of gas from these two companies, do you find the supply of gas in your own house weak occasionally?—Weak in illuminating power; but not weak in pressure, for I say we have excessive pressure.

2379. Do you find, after it has been burning for some time, that there is a disagreeable smell?—The system we adopt is, directly it gets dusk, every gas-light in the house is lighted, so that if the servants want to go about the house they have only to turn up the tap; and when we have got a few people in the house the lights downstairs, instead of being kept burning brightly, are kept down, and, after they have been burning two or three hours, there is just the same sort of smell that one of the witnesses of Notting-hill explained on the first day. There is an earthy kind of smell, which, I presume, is formed by the combination of sulphur and ammonia.

2380. Do you think a consumer has any adequate protection from the impurity under the Gas Act, as it at present exists?—I know a great deal about gas works, having had 25 years' experience, and I know no means by which I can bring about an improved supply of gas in my own residence.

2381. *Chairman.*] You do not know any means of doing it?—No.

Cross-examined by Mr. *Denison.*

2382. To begin with that: did you ever complain to the companies who supply you?—Do you say the companies or company?

2383. The company, then?—We have complained to the company.

2384. Which company?—To the Western.

2385. What of?—The complaint I made was that the pressure was excessive, and that the gas was so over-charged with ammonia, that when the servants washed the globes of the chandeliers they complained that it was just like standing over a bottle of smelling salts, the smell of ammonia was so strong in the water.

2386. I intended to ask you a question about ammonia, but I scratched it out, because you said you did not think ammonia of much consequence?—Not when it is free from sulphur, but when it is in combination with the sulphur then it is bad.

2387. It is the sulphur that is bad?—It is the sulphur that is bad.

2388. Have you complained to the other company?—We have burned so little gas in the City, that had it not been for this inquiry I should not have troubled my head about it.

2389. I think you said you are also supplied by the Imperial?—I said I am supplied by the Imperial in three houses, and that if it were not for the Act of 1860, I should prefer to be supplied, at my own residence, by the Imperial.

2390. Have you got an inspector to examine the gas?—I have said before that the vestry has not appointed an inspector.

2391. Have you yourself employed any gentleman or any such as Dr. Letheby to test?—No; most certainly I could not employ any professional man like Dr. Letheby. I should take my own opinion upon testing the gas in preference to any professional gas testers, because I am a manufacturer.

2392. I can quite believe it. In fact I saw the readiness with which you disavowed Dr. Letheby. You told us of his going down to examine your works. You do not happen to have a copy of his report which he presented to the people of Uxbridge?—I have the report and my answers both in the room.

2392*. I should like to see the report; your answer you will give in evidence; the report we must have from you. (*The Witness produced a copy of the "Gas Journal," and handed it to the learned Counsel.*)

2393. Mr. *Denison.*] I have got that.

Mr. *Denison* proceeded to read Dr. Letheby's report.

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The *Chairman* asked whether Mr. Denison wished this report to appear upon the notes?

Mr. *Denison* said he did not.

2394. You told us you convinced Dr. Letheby by your own experiments. Now, did Dr. Letheby in that report profess himself to be convinced by your experiments; you know very well whether he did or not?—He has in this room recanted.

2395. Did he in his report?—He never gave an opinion at all, until I saw the report in print.

2396. You having read his report, don't you know that Dr. Letheby was not convinced by your experiments?—All I can gather from Dr. Letheby is this: that he has discovered by separating cannel coal from Newcastle coal, that he can increase the illuminating power of the gas.

Mr. *Denison* then read Dr. Letheby's report from the columns of the "Gas Journal."

Witness.] I will only make one short statement; my answer to that is this: that the gas tested in the town, before anything was done to the retorts, was $12\frac{1}{2}$ candles, half a candle more than I was bound to give.

2397. *Chairman.*] I think the witness has clearly shown how he could manipulate his gas to show an excess of illuminating power?—I dispute Dr. Letheby's second experiment at the works; he had not time to try it.

2398. Mr. *Denison.*] It was chiefly with reference to ammonia; what burner do you generally use, or what burner is used against you at these works?—I myself have always used the old burner; but when Dr. Letheby came to my works to test the gas, I produced one of his own burners and made him test my gas with it.

2399. Then the 12·06 which Dr. Letheby found was with the new burner?—I say by the burner Dr. Letheby tested with he reported it to be 12—something—candles.

2400. Do you know which burner it was?—I say it was Dr. Letheby's burner.

2401. Then it was the new burner?—It was the new burner.

2402. Therefore, that which was 12 candles by the new burner, according to your own evidence, is about 10?—Dr. Letheby says it is.

2403. Is there a difference of two candles between the old burner and the new?—Dr. Letheby says there is.

2404. Do you believe it?—No.

2405. What is the difference?—The difference will depend entirely upon how you burn the gas in them; if you burn the gas as the consumer burns it, the difference is not what Dr. Letheby says it is; if you burn it in a way that no consumer of gas can ever burn it, then there is the difference.

2406. That is a valuable piece of information; if you burn it as the consumer burns it, there is no material difference between the old burner and Mr. Sugg's burner?—You could not use Sugg's burner, because of the smoke.

2407. What do you mean—there is no difference?—Not in the illuminating power.

2408. In the way in which testing people test it, is it worth two candles?—Dr. Letheby says it is.

2409. Do you believe it?—When you test it under those peculiar circumstances, it is so.

2410. Then, to come back to this, that which Dr. Letheby called 12-candle gas——?—I can see what you are aiming at, and I can save a deal of trouble.

2411. Please listen; that which Dr. Letheby calls just 12-candle gas by Dr. Letheby's burner, would be 10-candle gas by the old burner?—It makes the 10-candle gas appear to be 12. If that is what you want to get at I will give it you; and Dr. Letheby reported it to be better gas than the London.

2412. That is not in his report?—It is in his evidence; he says it is better gas than the London gas.

2413. You have told us what it is, and Dr. Letheby has told us what the London gas is; you have told us it is 10, and we know what the London gas is?

is?—Dr. Letheby distinctly states in his evidence that Uxbridge makes better gas than London.

2414. Do you mean his evidence given here?—Yes; it is on the notes.

2415. You complain of the testings being taken at a great many hours, and of the average being given, do not you?—I do.

2416. Where is there any requirement that it should be so done in the Gas Act?—I did not say it was; I only said it was the mode in which it was done by the gentlemen employed to test the gas in the City of London. Dr. Letheby always reports the average quality and purity, which I say is unfair.

2417. The Act gives power to test at any time?—The Act gives you a burner, but the tester gives you a different burner.

2418. I am not talking about the burner; we are talking about the time. Do you know that the Metropolis Act gives power to test at any time?—It does; but I also know that the parties do not do that.

2419. That is, Dr. Letheby does not?—By his public reports, he gives you the average.

2420. We are talking about the Act; you made another statement about Dr. Letheby, which is rather extraordinary; you said, did you not, that Dr. Letheby tries to give an artificial quality to the gas that he tests?—I said that he introduces a burner that make 10 candle-gas appear to be 12.

2421. That is what you mean by saying he tries to give the gas an artificial quality?—Distinctly.

2422. Now about the sulphur test; is nitrate of silver recognised by chemists as the mode of ascertaining the quantity of sulphur in gas?—That is one mode I have known ever since 33 years ago, when I used to assist my father.

2423. That is not answering my question?—Yes, it is.

2424. You say that deliberately?—Yes, I do; it is one that I have used more than 30 years.

2425. Is nitrate of silver recognized by chemists as the proper mode of ascertaining whether there is more than 20 grains of sulphur?—I do not know what chemists do; I can only say I, as a gas man, have used it 30 years.

2426. You also say it is difficult to ascertain the quantity, do not you?—It is impossible to tell the quantity by this, except that the darker the paper the more the sulphur; and by taking the two companies, I say distinctly that there is more sulphur in the case of the one company than in the case of the other.

2427. Which are the two?—The Chartered and the Western.

2428. Do you know how much sulphur there is in the Chartered?—I do not; it is reported to be more than the quantity allowed them in the Act of Parliament.

2429. What was it at the time you made the test?—I tested that with it since I was here last Friday; I only take it as a matter of common sense that any one can see by the two tests which is the better gas.

2430. We have chemists about that?—Chemists are not gas manufacturers.

2431. But they are chemists?—And you know what chemists can prove.

Re-examined by Mr. *Webster*.

2432. I understand you to say the tests that you laid before the Committee were tests to indicate the presence of sulphur in the two gases, and not its quantity?—That is so.

2433. Although it would not enable you to assign the absolute quantity?—Just so.

2434. My learned friend asked you whether there is anything said about the time of testing in the Metropolis Act; your contention was that the testing should be during the hours of consumption?—That is so.

2435. My learned friend asked you some question about testing at the gas works at some distance from the town; is distance from the works at which the test takes place a material matter?—It is not; for if the gas is properly made and purified there is no depreciation in the quality, whether it is taken at the gas works or six miles away, or any distance from it.

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2436. Or you think that the testing being the simple method you have described, it might be tested in the house of the consumer?—The gas ought to be tested at a distance from the works, not on the works; for I have been called in myself by local boards to test the gas; I have furnished the notice at the gas works, and prior to my coming down they have converted the 10-candle gas up into 16-candle gas.

2437. *Chairman.*] Let him state the distance?—Six miles.

2438. Mr. *Webster.*] But if gas is properly made and purified is the place at which it is tested immaterial?—Perfectly immaterial.

2439. Now, my learned friend read you Dr. Letheby's report, and I think you referred to an answer from your own report; is there anything either in that report or your answer to vary the evidence you have given as to the ability to raise the quality of gas within a short time?—I think that letter ought to convince the Committee that it is very easy to alter the quality of gas in a short time.

2440. And does that report, so far as you know at present, and the answer, support the evidence you have already given on that point?—Entirely.

2441. Mr. *Lusk.*] You say you gave evidence in 1860 with reference to the present Act?—I did.

2442. Then you know something about the old burner?—I experimented on the old burner 20 years prior to that.

2443. Now, a company who show by the new burner that they are giving you 12 candles, are simply giving you about 10 by what was understood at that time?—Just so. The experiments tried at that time showed the gas as 10 candles, and if the same burner was used now it would still be 10 candles, but by the improved burner it is made to appear to be 12 candles.

2444. That is not exactly what was intended?—I should think not; the Committee in fixing the price, thought they had fixed the quality.

2445. As a gas manufacturer, are there any chemical tests you can apply to gas, except with burning, to find the quality?—There is a test, but it cannot always be depended upon. Prior to the use of the photometer, we used the shadow meter, and in addition to that we used to weigh the gas, the greater the physical gravity the larger the amount of light there was in it, so that we had two tests. But now that would not do, because the London gases are so overcharged with carbonic acid, that you would get the weight but not the illuminating power. The only practical test I could give would be with the bat's-wing burner.

2446. You think there is no other test except the burning?—I think there is no other means, unless you make it so that carbonic acid gas shall be made a penalty if it is in the gas; then the specific gravity would be a good test.

2447. What number of candles can you get from the usual Newcastle coal?—I never can get more than 12½ candles from the Newcastle coal.

2448. The usual coal?—Newcastle coal is the coal usually used in London and the districts.

2449. With the old burner or the new burner?—With the old burner.

2450. That is equal to 14?—That is equal to 14 with the new.

2451. You think three hours' notice should not be given?—I think you should not give five minutes notice.

2452. Because by throwing a little cannel coal ——?—By throwing a little cannel coal into a retort, or charging a certain number of retorts, according to the size of the work, you may change the quality of the gas six miles off in a quarter or half an hour; or by having a syphon made at the entrance of the gas works by pouring spirits of petroleum or coal-tar naphtha into it, as the weak gas goes through it will lick it up, and you can increase your 10 candles to 16 candles as the gas travels.

2453. Throw a little more spirits into the water and make it stronger?—Yes.

2454. Do not you think the companies virtually do what they like with the gas?—They do exactly as they like.

2455. As a rule do you think it is desirable that men having a power and an interest in supplying you with a fair article, should be restrained in any way?—I think a gas company, having a monopoly, they ought to have that monopoly well regulated; there is no doubt about it, if I was asked in cross-examination, that

that one company is better than two, providing the monopoly is well regulated, and the company carry out the Act of Parliament they have got.

2456. Looking at the present state of things, do you think really they require better regulation?—They do; for the gas consumers are not getting what the Committee appointed in 1860 intended them to get.

2457. In fact, from a word you dropped a little while ago, you say the vestries appoint no inspectors at all?—I suppose the bulk of them do not.

2458. And then the poor man has no remedy at all?—Nor the rich one either; I am not a rich man, but I would have taken the steps, if I could have done it, to have compelled them to give me better gas; I can call in a chemist to assist me; we can try our experiments, and we can write to the gas companies and say Dr. Letheby, Dr. Aldis, and two or three other gentlemen attended, that we have tested the gas and found it to contain 25 or 26 grains of sulphur, that it was overcharged with ammonia and deficient in illuminating power, but that is all we could do; the gas companies laugh at us; I have to pay the expense, and the gas company continue to supply the same quality; I say that I ought to have a right to go before a magistrate to submit the experiments there and then to him, and to have the company fined or compelled to supply better gas.

2459. Do you say the Act of 1860 is good or bad for the gas companies?—It is a bad Act for the public and a good Act for the gas companies.

2460. Mr. Serjeant *Kinglake.*] As regards tests?—For almost everything; as regards the quality of the gas and the purity.

2461. Do you mean it is bad as to dividing London into districts?—It is bad for the public to divide London into districts with an Act of Parliament like that. It is good for London to divide it into districts with a proper Act of Parliament; that is, a well-regulated monopoly is the best mode of supplying gas.

2462. Supposing the companies to be under proper restriction?—Yes.

2463. One of your recommendations, I understood, was, that you would have a compulsory system of testing?—I would have public officers for each district.

2464. Have you formed any opinion; by whom would you have the officers appointed?—Either by the Metropolitan Board of Works, or by the vestries in whose parishes the gas is consumed. I think myself the fairest way would be by letting vestries who are going to consume the gas appoint their own officer; then there should be a chief officer above the whole of the inspectors, and he should be either appointed by the Secretary of State or the Metropolitan Board of Works in the one case, and the Corporation of London in the other.

2465. Then you would have a special examiner for each district, and an inspector to regulate the whole?—Yes; who would be responsible for the whole.

2466. It would be a compulsory process; can you form any judgment as to how often those officers should be called upon to test?—It should be continuous; whenever the gas was being consumed, there the gas should be tested and registered.

2467. Do you mean every night?—It should be tested three or four times or oftener during the course of every night.

2468. Mr. *Morrison.*] Are you aware that the districts are co-terminous with the parishes?—No, they are not; because in my case I have a gas company within three doors of my own house.

2469. Then how should you deal with a question of a parish partly in one district and partly in another?—The parish burning the most gas should be the parish to appoint the inspector for the district.

2470. Sir *William Gallwey.*] All your objection to the present system is this, that there is not an efficient test; that if there was an efficient test you would be perfectly satisfied with the present system of districting?—Oh yes, distinctly.

2471. That is the purport of all you have said?—The City of London is rather different to the outside districts, because there are three companies not districted; but yet in front of my office there are the pipes of two companies. I sent to the Great Central, and wanted their gas in preference, but they would not give it me.

2472. With regard to districting, your only objection to any further districting is this, that there is a monopoly, that there is no means, easy, practicable means, for regulating it?—It is not well regulated.

2473. Mr. *Hartley.*] Do you attribute that to the Act of Parliament or to

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the gas companies evading it, or to the local authorities failing to put the Act in operation?—I think it arises from all three causes.

2474. Mr. *Paull.*] You say the gas consumers are not getting what the Committee intended them to get. Is that because the gas is tested by one burner, which produces a greater illuminating power, and the consumers will not use the same burner, and therefore the gas when it is lighted is not as good as when it goes through the other burner?—That is so far as to the first part of the question, but with regard to the second they cannot use it.

2475. Well then, in order to amend this Act, you would have a provision that the testing burner should be the same as the consumers' burner. Would that be adequate?—It would.

2476. Then I take you again, that "I believe if a system were laid down the gas companies would carry it out." The reason they do not carry out the Act is that there is no system?—Just so.

2477. Then the former question met that?—Yes, I think so.

2478. So that the real difficulty depends upon the difference between the two burners?—With regard to the illuminating power.

2479. Then you said gas might be supplied with only five grains of sulphur, and the maximum ought not to be more than 10 grains; but you did not tell us by what operation the sulphur would be eliminated?—By using the oxide process, and the lime process, and having the gas washed.

2480. But we have been told that, although it might be possible that the gas should go through both processes, that the space that would be required would render it quite impossible in the City of London?—That evidence was not given by a gas manufacturer. A purifier is made of cast iron, with a series of trays or sieves, and you have only to increase the height, and having oxide in the lower part, and lime in the upper, there is no increase of space required.

2481. *Chairman.*] But then you want greater space for getting rid of the residuum, do you not?—Oh, no.

2482. If it is lime you do?—By having it first washed, you take out the ammonia, and then, sending it through the oxide of iron, the lime has simply the carbonic acid to take up, and that lime will last a long while; it is no nuisance, and it does away with the objection, by using the other processes prior to the lime.

2483. Do you mean it could be used again and again?—It can be used for a long time, and immediately it is done with it can be put into barges and sold for manure, and pay its cost back again.

2484. Mr. *Paull.*] Thus the gas would have to pass through the oxide and then the lime?—You would first take away the ammonia, then the oxide would take away the sulphur, and the lime would merely have a small quantity of sulphur free from the ammonia, and the carbonic acid to deal with; the reason the lime used to smell was because the sulphur was so impregnated with the ammonia; ammonia in the gas itself is not injurious, but when it is mixed with large quantities of sulphur on the combustion at the burner, it produces the effect I have shown you.

2485. The gas must pass through the oxide first?—Yes; and through the lime afterwards.

2486. Such an apparatus as might be suitable for your works at Uxbridge would that suit for the same works in London?—It is exactly the same process.

2487. But as to size?—My vessels would be eight feet square, and in London they would be 12 or 18 feet square; that is all the difference.

2488. In your judgment that would be enough?—Exactly; you only want it twice a night.

2489. And by that means the quantity of sulphur might be reduced to five or ten grains at most?—It is the subsequent change in the purifying material that has produced the sulphur; it has all been done by the alterations in the mode of purification.

2490. Mr. *Webster.*] There is an answer, I think, to a question by the honourable Member for Finsbury which might be a little better understood. The honourable Member was asking you about chemical tests. I understood you to say chemical tests would show the presence of these impurities but not the quantity?—Just so.

Mr. *William Heywood*, called in, and Examined by Mr. *Hoggins*.

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2491. ARE you a member of the Institute of Civil Engineers?—I am.

2492. And engineer and surveyor to the Commissioners of Sewers of the City of London?—Yes.

2493. Have you held that office for about 20 years?—I have.

2494. The Commissioners of Sewers have the charge of the highways and the street lighting, have they not?—They have.

2495. And all the questions affecting public lights in the City, except that of the chemical quality of the gas, which comes under the attention of yourself and Dr. Letheby?—It does.

2496. And, during the time you have held your appointment, have you paid great attention to the gas question?—Necessarily; it is involved in my appointment to do so.

2497. Soon after the Metropolis Gas Act of 1860 became operative, were petitions numerously signed by the inhabitants of different wards presented in the City?—There were numerous petitions presented to the Commission.

2498. Were they complaints against the working of that Act?—Yes; they were.

2499. At a later date were further petitions and communications from the inhabitants, and from any of the said vestries, made to the Commission containing complaints of the impure quality of the gas?—Yes.

2500. Mr. *Denison.*] Let us see the petitions?—They were generally in the shape of petitions to the Commissioners of Sewers, generally presented by the ward clerk or the vestry clerk, and very frequently attended by members of the wards or vestries, who brought the petitions.

2501. Mr. *Hoggins.*] Were they complaints as to the impure quality and the inefficiency of the gas?—They generally complained.

2502. And as to the illuminating power?—Yes; and also complaints of the inefficiency of light for public lamps; those were very frequent.

2503. Those petitions and communications were referred to a special committee of gas appointed on the 14th June 1864?—Yes, when the petitions became very numerous; and as soon as it became a matter of public complaint that the gas supplied to the City was unsatisfactory, it was referred to the special committee.

2504. And, at the request of the committee, did Dr. Letheby and yourself enter into a general examination of the condition of the gas supplied to the City, and report thereon in writing?—Yes, we reported upon all the conditions of gas supplied in the City in December 1864.

2505. That is the document, is it not (*handing a book to the Witness*)?—Yes.

2506. Did that report contain a statement of all the facts which came to your knowledge or to the knowledge of Dr. Letheby at that time?—It contained the whole of the information which I had, and I believe which Dr. Letheby had, upon that subject.

2507. Has anything occurred since to alter your opinion upon what you then reported?—No; I believe the whole of the statements in that report are facts, and can be substantiated.

2508. The cost of the public lighting has been very much increased of late years?—Very largely so, indeed.

2509. From the time the Great Central Gas Company laid down their mains in the City, did competition ensue with the other gas companies?—Yes; previously to the incorporation of the Great Central Gas Company there was no competition in the City; the City was districted, and of course each company took the public lighting that was within its district, but directly the Great Central Gas Company was incorporated, and laid down their pipes, competition ensued with the other companies, very much to the benefit of the citizens, and very much to the reduction of the cost of public lighting.

2510. Between 1854 and 1856, inclusive, was the total cost of public lighting varied from 8,732 *l.* to 8,833 *l.*?

The *Chairman* said it was not desirable to take evidence prior to 1860.

2511. Mr. *Hoggins.*] Are you of opinion that for many years the companies supplying the public lamps dealt liberally or otherwise with the Commissioners?—Yes;

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--Yes; there is no doubt they did. A great many years the public lighting of the City was very satisfactory indeed; there were never any complaints, and I have every reason to believe that an exceedingly liberal amount of gas was given to the public lamps.

2512. Is it only within the last few years that the falling off of light became a matter of public notoriety and complaint?—I think it was somewhere about the year 1862 that the falling off in the lights given by the public lamps became noticeable. I find in that year I made a report to the Commissioners, and drew their attention to the advisability of their employing a special officer to take means to check the consumption of public lamps, but nevertheless there were no public complaints at that time, and the Commissioners did not make that appointment.

2513. *Chairman.*] You were the only complainant?—I was, so to speak, the only complainant; but the inspectors of the various districts had, I apprehend, at that time told me they had noticed a deficiency in the public lighting, and as I was then reporting upon the form of contracts, I drew the attention of the Commission to the desirability of having some competent officer to inspect the public lighting; still there were no public complaints at that time, and the Commissioners did not then make the appointment; in the year 1857 the complaints became much more frequent, and I drew the attention to them in my annual report of that date.

2514. Mr. *Hoggins.*] In subsequent years the complaints were still more frequent?—They were; and in 1861 the Commissioner of City Police undertook to report to the Commission whenever defective lights were observed, and he reported as to the gravest defects in the public lights, but took no notice of a general want of light, or a general feebleness of light; whenever lamps were blown out, or had never been lighted at all, or were extremely feeble, they were reported.

2515. In 1862, the Commissioner of Police undertook to furnish every morning an account of the defects observed by his constables on the preceding night?--He did; but they only had reference still to the grave defects.

2516. And is that done still?—Yes; that is continued to the present time. Every morning there is delivered to my office a return of the defects in public lights.

2517. Now, have you a statement of the total number of defective lights in the City?--There has been, since 1861, a gradual increase in the defects in the public lights. I find the total in 1864, given by the police, was but 334; in the year 1865 it had risen to 1841. By defects in the public lights I mean grave defects. I wish the difference to be carefully understood, because there may be a great want of light generally throughout the district which was not noticed by the police; in fact, that was the case, and it was rather a general deficiency of light throughout the City, which became a matter of public notoriety, than these defects which I have alluded to. The gravest defect was the general want of light.

2518. Now, you have reports made to you which you authenticate for the years 1861, 1862, 1863, 1864, and 1865, of serious and grave defects?—I have.

2519. What is the gross amount of those years?—I have just told you; in the year 1862 they were 334, and they have gradually risen, until in the year 1865 they reached 1841; I can give you the intermediate particulars. (*The Witness handed in Statement.*)

Vide Appendix.

2520. In consequence of the complaints that were made in 1862, was a particular officer appointed?—A clerk of the works was appointed especially to investigate the causes of those complaints and to make such general observations upon the public lamp-lighting of the City as appeared necessary to Dr. Letheby and myself, and that officer has worked from 1862 to the present time under the joint direction of Dr. Letheby and myself.

2521. In 1862, were meters also fixed to lamps in various parts of the City?—Yes, there were great complaints of the deficiency in public lighting, and the only way to ascertain very accurately whether the first condition of the contract with the gas companies was fulfilled, which was, whether the proper quantity of gas was supplied, was to affix meters in various parts of the City.

2522. And were they there in 1863 and 1864?—Yes, they were continued to be placed.

2523. And

2523. And to the present time?—There are at the present time meters throughout the whole of the City.

2524. Were they placed with a view of checking the consumption of gas and thus insuring a standard of light in numerous parts of the City?—It was thought of course the Commission would be quite sure to have the full amount of gas supplied to the lamps which had meters, and we thought those would be instructive to the police, who were informed of those which they might consider as the standard lights, so that they might judge of the deficiency of light in the others.

2525. Can you give any particular instance of carelessness which you yourself, from those observations, can authenticate?—I am now speaking from the figures supplied by the clerk of the works, to whom I previously referred; and the first neglect in the public lighting, which I can call your attention to, is the extreme irregularity in the consumption of the public lamps, for I find three feet burners, varied from 1·83 cubic feet per hour to 6·30, and five feet burners varied from $3\frac{1}{2}$ cubic feet per hour to $7\frac{1}{2}$ cubic feet per hour; that is simply an illustration of careless management in the public lighting.

2526. Were the three feet and five feet burners lighted by different companies?—They were. Then, with regard to the actual quantity consumed at the public lamps, it was found by taking certain streets and recording the consumption of gas at the public lamps in those streets, according to this table, that there was a deficiency in supply; the average of seven streets, taken in the district of the Great Central Gas Company, showed 2·64 cubic feet per hour, instead of three cubic feet per hour, which was the contract quantity; and in the district of the Chartered Gas Company, where the contract was five cubic feet per hour, the average was only 3·76 cubic feet.

2527. Would it then appear the Central Gas Company was, at that time, giving 12 per cent. less gas, and the Chartered Company 25 less than the contract price, throughout the City of London?—Assuming those observations to be a correct average of the whole of the City.

2528. In the year 1864 were further observations made, and what was the result?—Observations were then made upon lamps with meters and lamps without meters, and it was found in that district which was supplied by the Chartered Company, and whose contract with the Commission was to supply five cubic feet of gas per hour to each of the public lamps, that the average quantity of gas supplied at lamps with meters was five, and slightly more than five, 5·06 cubic feet per hour; in fact, there was full quantity supplied, but that at the lamps which were without meters, 4·49 cubic feet only were given, that is to say, where there were meters, there was more than the full quantity, where there were not meters, there was not the full quantity given.

2529. Are the public lamps without meters, above 100?—A hundred lamps were taken.

2530. A hundred public lamps without meters were taken for observation?—Those were the results of observations on a hundred public lamps.

2531. Now, as to the south district, the Great Central Gas Company?—In the south district the quantity consumed nominally at the public lamps was at that time three cubic feet per hour; at those lamps to which meters were affixed the quantity consumed was 3·43 cubic feet per hour, and where there were no meters the average was 2·65 cubic feet per hour; those averages were taken from 69 public lamps.

2532. The south district, which you have just mentioned, was the Great Central Gas Company?—It was.

2533. A copy of the report and the observations you made was, I believe, sent to the gas companies, and did the companies make any reply?—Yes, they said they had observations of their own taken, and that they found very different results; that to the best of my recollection they found more than the proper quantity of gas was being given.

2534. Did you reply to that, that your observations were made with the greatest care, and with instruments that had undergone searching tests?—The observations were taken with the greatest possible care, and the instruments were made by the very best makers; their accuracy was checked from time to time by a person who was perfectly competent, who had no actual knowledge of the object more than was implied in the operation itself; I therefore assume them to have been taken with honesty, and I believe them to be strictly correct.

 2535. I suppose

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2535. I suppose it is obvious the observations made or professed to be made by the companies, were made subsequently to yours?—Necessarily, because after the observations were made they had to be tabulated, and these general results obtained; then they had to be reported to the Commission, and the Commission reported to the gas companies, therefore a considerable interval of time necessarily took place.

2536. There was plenty of time in the interval for an alteration of the state of the gas?—Certainly; whatever the registration at the gas-lamps might have been a month after the observations made by myself or by my assistants, it would not falsify in any respects my results; the mere cleaning out of a burner, or putting on a new burner, or the gas being a little more turned on, or there being a little more pressure that night, would all affect them; it is quite possible both the results may have been strictly right, both mine and the gas companies' too; but certainly theirs do not invalidate mine in the slightest degree.

2537. But there was plenty of time for an alteration in the state of the gas?—Yes, there must have been at least a month.

2538. After your communications to the companies, did the gas improve for a short space of time?—Yes; it was noticeable that there was a general improvement in the public lamp-lighting throughout the whole City.

2539. Then, did it relapse again into the old state of things?—No, I cannot say it has ever relapsed; the observations which have been made, and the fixing the meters at various public lamps throughout the City, have very much amended the public gas supplying the whole City. They have not given a very full supply at other times, but there is no doubt that the observations which were made, and the fact of there being a special inspector to look after them, very much improved the gas supply, with respect to the public lamps.

2540. Are you of opinion that no reliance can be placed on the comparative value of such tests, made at the intervals of a month?—Oh, for the purposes of comparison, they are useless; I have just said to you they may be both perfectly right, they do not invalidate each other.

2541. Was it thought that, where sufficiency of supply to the public lights existed in some cases, it was attributable to the defective condition of the service-pipes and fittings of the lamp-posts?—It was so stated, and that was the impression among many people at the time.

2542. But in 1863 and 1864, were new lamp-posts erected in certain streets in the City?—They were.

2543. And was the pipeage of those lamps new?—Perfectly.

2544. And was the supply of the gas upon that state of things delivered under the best conditions?—Yes, it could not have been delivered under better.

2545. Did the observations made with meters at the lamps in 1863 and 1864 show that in one street, where all the gas fittings were new, 2·53 cubic feet were given, when the contract quantity was three cubic feet?—Yes.

2546. I think you have something to say about gas contracts, up to the period of passing the Metropolis Gas Act, the Commissioners before receiving tenders for public lighting had specifications of conditions which they sent to the companies; have the companies attended to those conditions?—The companies were written to annually, and a specification of conditions was tendered to them; they tendered upon those conditions, and the contracts were framed embodying those conditions.

2547. And then the companies have refused to accede to those conditions?—After the passing of the Metropolis Gas Act, the Commissioners prepared the usual specification, and tendered it to the companies; the companies declined to have any contracts framed upon those conditions; in fact, they declined any conditions; they said, "we tender under the Metropolis Gas Act," whatever that might have meant, and we are subject to the Metropolis Gas Act. They declined any conditions, except that of the price they were to be paid.

Cross-examined by Mr. *Denison.*

2548. The companies refused to enter into any conditions; they determined, you say, to go upon the Metropolis Gas Act?—Yes.

2549. And there are clauses in the Metropolis Gas Act expressly relating to public lamps, are not there?—There are; but, as I understand these clauses, it was an obligation of the company to contract with Local Boards upon reasonable

able clauses, and they refused clauses altogether; they simply vaguely stated, "we tender under the Metropolis Gas Act." The object of the original specification was to incorporate with it penalties for the non-performance of the contract. There are no penalties in the Metropolis Gas Act with regard to public lighting.

2550. The Act finishes by reference to arbitration?—There is an arbitration clause in the Act, but, of course, it would be a very inconvenient thing to have gone to an arbitration of the Board of Trade, because the company had not lighted a lamp on the previous evening.

2551. It would have been very inconvenient to go to arbitration?—I think so, upon such a thing as that.

2552. There was a provision also as to the price they are to charge in clause 37?—Yes; I thought we were not going into price.

2553. Will you be kind enough to answer my question; there is a provision as to price they are to charge?—For the public lamps?

2554. Yes?—Yes.

2555. Do you pay by meter or by lamp?—By lamp.

2556. But when the meters show that they do not give you what you consider to be their specified quantity, what do you do then; do you pay nevertheless?—The companies have been fined nevertheless.

2557. Do you really mean to say you acquiesce in paying for gas that your own meter has proved you have not had?—I have not had to acquiesce in it in the slightest degree; the Commission have hitherto done so.

2558. A word more about these contracts, when were the last contracts made?—They have tried to remedy it by other processes; they have asked you to allow us to fix meters and to light and extinguish ourselves.

2559. I am particularly desired to ask you whether one of the companies did not offer to let you fix meters to every lamp?—Certainly they did; to every lamp, but the Commissioners thought the remedy worse than the disease in such a case as that.

2560. You have meters to a great many lamps now?—I cannot recollect the exact number, but I should say between 50 and 60.

2561. Out of how many?—Out of about 280.

2562. Who fixed the proportion that you were to have?—The Commission fixed the number of meters they thought requisite.

2563. When did you make your last contracts?—They were made, I think, in the spring of the present year.

2564. What quantity of light do you stipulate for per lamp?—Five cubic feet per hour.

2565. How much used it to be?—It was always five cubic feet per hour, with the exception of about three years, and in one district.

2566. Which three years were those?—I think they were 1862, 1863, and 1864.

2567. That is to say that contract was made in 1862, I suppose?—It was let, I think, in 1861, to take effect at the beginning of 1862.

2568. Under that you had how many feet per lamp?—In the district of the Great Central Gas Company we had three cubic feet per hour.

2569. Who suggested that alteration?—I think it was the Commission suggested it.

2570. And the reason for suggesting it was?—An experiment which was being tried with the naphthalysing process.

2571. That is Mr. Hughes's?—No.

2572. Has he nothing to do with that Carburetting Company?—No, I have never heard that he had.

2573. You were sanguine about that process, were not you?—I was sanguine to this extent, that it might have been the means of saving the City 1*l.* per lamp if it had been fairly treated: I think if the Commissioners had had the lighting of the lamps themselves they might have saved it.

2574. It was tried for three years?—It was.

2575. And although you did not report against it, at last you know Dr. Letheby did?—I do not, indeed; I know he was of the same opinion as myself, that it might be made to save 1 *l.* per annum per lamp.

2576. We will see what he says, under his own hand, if you look at page 81 of this document: "A common notion prevails that the use of the carburettors

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in the public lamps has not been successful; I have, therefore, made it my business to ascertain whether this notion is founded in fact, and, if so, whether the failure is due to an imperfection in the principle of the process, or to the manner in which it has been applied. On the first of these heads we have sufficiently expressed ourselves in the body of the report; and it is necessary only to say that, while, on the one hand, it cannot be denied that the use of the carburettors has not given public satisfaction, so, on the other, it must be admitted that, although the process has not been fairly applied, its want of success is by no means so great as is generally supposed." Then he proceeds to state the principle; and the result of it was it was given up, was not it?—Yes, it was given up; it did not give public satisfaction, there is no doubt about that, though I think it was owing largely to the fact that the gas companies did not like the process. Of course, every pound per lamp saved upon the public lamps represents a loss to the gas companies.

2577. You say it would have answered better if you had lit the lamps yourselves?—I think it would; a conflict between the commission and the officers of the gas company was not likely to conduce to the success of an experiment of that sort.

2578. Was there such a conflict?—I think so; that is my impression.

2579. What do you mean by saying it is your impression that there was a conflict; in what effects did that conflict evince itself?—Why, whenever there was a complaint of the want of light in the public lamps where the carburetting system was tried, almost invariably the company responded that it was owing to the carburettors; when we went to examine, we found that there was nothing the matter with the carburettors, but we frequently found effects in other particulars that rested with the gas companies.

2580. Did the Chartered Company offer to let you light yourselves?—Only under the condition of affixing the meter to each lamp; there is no doubt the Act of Parliament gives those who have charge of the public lighting the power of doing that if they choose to affix meters, but the process is so expensive that it is a question whether it would be worth the while of any public body to affix a meter to each public lamp.

2581. What is the expense of affixing a meter to each public lamp?—I really forget what the tendered prices were, but I think something like 30 *s.* per meter.

2582. What for street lamps?—Yes; I know it was very onerous, and then there was the annual charge of these meters as well; so that altogetner it would become a very expensive thing.

2583. But you would have saved a pound a year on each lamp, I understood you to say?—That is by the carburettors, not by the meters; we might save a pound a year by the meters; it is possible.

2584. And a pound a year by the carburettors?—If you assume that by the meters you alone could get the proper quantity of gas given you.

2585. I can only take your statement at present; and a pound by the carburettors, is that what you say?—No, it is not; what I said was you must take the two things together.

2586. Did you say you could save a pound a year by the carburettors?—Yes.

2587. Did you say you could save a pound a year by the meters?—Assuming that you have not the proper quantity of gas at the public lamps.

2588. Do you state it as a fact now that you have not a proper quantity?—My impression is at the present time that we have the proper quantity.

2589. How long have you had the proper quantity?—The public light has been very much improved since the beginning of last year, since in fact this report was in draft, and since the committee of investigation of the Commissioners of Sewers was instituted; but I have also told you that the greatest deficiency in supply was somewhere about 1851 or 1852, and that when the investigations were commenced by the Commission, when they put up these experimental meters and got the police to report to them and moved the clerk of the works to make the examination, that the gas supply has improved from that time, and at the present time it is better undoubtedly than it has been for years.

2590. And that has been since the beginning of last year?—Since this agitation took place.

2591. When

2591. When were these carburettors bought?—They were taken away last January 12 months.

2592. That again, is the beginning of last year?—They were only fixed in one district in the City.

2593. You told the Committee a little time ago, you had found the lamps without meters were giving much less than the proper quantity?—Yes.

2594. How is that ascertained?—By fixing a meter, and taking the registration of that meter.

2595. Then it becomes a lamp with a meter?—For the time being.

2596. You mean you put on a temporary meter?—Yes.

2597. Does not the very fact of putting on a meter itself diminish the quantity of gas that comes through?—It diminishes the pressure.

2598. Therefore the quantity that comes through?—Yes; allowance was made for that in calculation.

2599. That is your estimate?—Yes; there is a loss of pressure on the meter which was made for this purpose—this experimental meter made in the most delicate manner possible for this kind of work—it was found that the loss of gas which went through by going through the meter was almost imperceptible.

2600. Were the gas companies asked to be parties at all to this examination?—No, they were not; I think they once asked to be parties, but it was declined.

2601. And have the results been from time to time communicated to them?—I should think the majority of the results have been, because all the results have been laid before the Commission, and the Commission, by its clerk, as a rule, communicated everything to the gas companies.

2602. I want to know whether you know; I have a reason for asking the question?—I cannot answer you positively; I can say substantially nearly the whole have, but the clerk to the Commission can answer you that.

2603. The gas companies shall answer you in a few days?—My belief is that they have had them all communicated to them; the majority of them have all been put into print, and therefore the gas companies have had them.

2604. Who supplies the public lamps in these districts you have been speaking of; which of the companies?—I do not quite apprehend your question.

2605. Which district have you been speaking of, the whole of the City?—Yes.

2606. Which of the companies now do you refer to; you told us something about the Chartered, that they give more than the quantity, and the Central Gas less; there is another company?—The City of London Gas Company.

2607. What have they done?—That company has not supplied the public lamps for some years.

2608. Mr. Alderman *Lusk.*] There were numerous complaints against the working of the 1860 Act in the City?—There were.

2609. You were employed by those who employed you to see into it?—I was directed, with Dr. Letheby, to prepare a statement of all our notes upon the subject for many years, and to lay it before the Gas Committee, which has been referred to. We had the whole of the complaints before us, and the whole of the observations before us. In the book before you you will find the chemical and photometrical observations all detailed.

2610. What you tell us substantially is this, that the supply of gas these two or three years in the streets is not equal to what it used to be five or six years ago?—At this present time my impression is the supply of gas is honestly administered; previously to the last two years it was not.

2611. Not equal to what it was eight or ten years ago?—Oh, no, nothing approaching it; it was obvious to the most ordinary pedestrian; anybody who looked at the lamps, and had known them some years ago, would see the difference; it did not require any refined observation, it was perfectly perceptible.

2612. Were those stupid looking tin-pots of things put up for the good of the gas?—They were; the carburettors, for holding the naphtha.

2613. But they exclude the light from the pavement?—They cast a small disk of shadow on the pavement immediately beneath them.

2614. But they did not answer the purpose?—I think they might have answered the purpose if the commission had had the whole regulation of the gas supply, but they were ugly.

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2615. Did the companies refuse to contract with you in any other way except under the Gas Act of 1860?—They were the terms used by them, that they were prepared to supply under the conditions of the Metropolis Gas Act of 1860.

2616. Can you tell me for a fact you have been paying in the City for gas which you did not use?—That is to say the Commissioners have made no deductions.

2617. What did your authorities say to the public as to that cause; the public have to pay for them?—The Commission, when they looked into the matter, I imagine, thought that the remedy was worse than the disease; that there was practically no remedy; to begin with, if the statement had been made of the defect at any particular lamp, the probability is it would have been denied point blank.

2618. Do you say that when you measured the gas by an accurate test it was not that quantity that should have been supplied—that is, five feet?—Undoubtedly; it was proved beyond doubt.

2619. You measured it by accurate tests?—It was measured by an experimental meter, made as well as it was possible to have the instrument made.

2620. And you found that the public were not getting the gas that was contracted for?—They were not.

2621. As to you not allowing the companies to see the testing, I suppose you thought it might not have been tested so well if the companies knew your object?—As an abstract rule of conduct in such matters that is the case; for instance the gas-lighters might have known of it, and it was only to have turned the tap on a little fuller and to be a little extra careful; twenty-four hours' notice would enable that to be done, and with that notice I think I may say the gas would have been all right that night.

2623. As a rule, you think it is not the proper way, when you try a man's integrity, for you to tell him you are coming to do it?—I think you should be allowed to use your own judgment as to the way in which you will proceed.

2624. Mr. *Paull.*] You said, there is a metered lamp and a non-metered lamp, both supplied from the same main?—Yes.

2625. How do you explain that there is a stronger pressure of gas where the meter was than where it was not?—I did not say it was a stronger pressure; I mean to say that there was more gas consumed; either the tap was turned on more fully, or there was a larger burner, or more care was taken, because to a large extent this is want of care on the part of the gas companies.

2626. Then you do not mean to impute to the companies, or to their servants the gas-lighters, that they can produce a greater quantity to be burnt with a metered lamp than with a non-metered lamp?—Yes, they can, if they take special care and have the burners in better condition.

2627. Do you mean to impute to the companies that they instructed their gas-lighters to turn on more gas?—I do not impute that at all, but I state the actual fact, and must allow any conclusion to be drawn from it. It is a fact that such was the case, and, therefore, whether they instructed their gas-lighters or not, I do not say they did, but the fact was so; probably the zeal of the gas-lighters themselves when they found the meters were on the lamps, and that those lamps were being regularly watched, stimulating them to an active discharge of their duty, which they otherwise would not have done.

2628. Mr. Alderman *Lusk.*] As a practical man, what suggestions would you give us as to amending this Act?—That is a very wide question indeed.

2629. Is there any practical suggestion you can give us?—I do not think I can give the Committee, asked, as I am, at this present moment, an opinion so well made and so deliberately thought over as it should be, therefore I would rather you did not ask me the question now; if you wish me to answer it at a future day, I will do so. With regard to the public lighting, I can tell you what I think would be a fair measure of justice, that is, that the Board having charge of the public lighting, should itself light and extinguishing the lamps that sufficient metred lamps should be put up in the City to give us what I should call a fair standard of light, and that regulators which our machines, capable of adjusting gas supply with very great nicety, should be fixed to the whole of the other lamps. Then I think the lighting and extinguishing of the whole should be left to the local authority.

Re-examined

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Re-examined by Mr. *Hoggins.*

2630. Is a meter to each public lamp possible in the City?—Oh, it is quite possible.

2631. What was the reason for not adopting the proposal which was made, of a meter to each public lamp?—The expense and the trouble; there is first the cost of putting down this meter; then there is the annual expense of maintaining that meter, and there would probably be the repeated expense of taking off these meters and checking them.

2632. And a new lamp-post?—Well, I designed a new lamp-post, with a view to holding them; unless they were to be made very ugly, or be placed immediately beneath the base of the lamp in the pavement, which is not convenient for them, it would be desirable to have entirely a new set of lamp-posts.

Mr. *Francis William Jebb,* called in; and Examined by Mr. *Sargood.*

Mr. *F. W. Jebb.*

2633. I BELIEVE you are Clerk to the Westminster Board of Works?—I am.

2634. Is the public lighting in that district under the jurisdiction of your Board?—It is.

2635. Which are the companies that supply the gas?—The Chartered, the Equitable, and the Western.

2636. In the discharge of your duties, do you attend the sittings of the Board?—I do.

2637. Has the illuminating power, or the quantity of light given by public lamps, been the subject of observation there?—It has.

2638. Has the amount of light been satisfactory or otherwise?—It has not been satisfactory, in some instances.

2639. Do you draw any distinction between the three companies as to that particular fact?—In 1862 or 1863, I was directed to write to the Western Company complaining of the lighting at Knightsbridge; and we have also had complaints from memorialists and other persons residing in the district, pointing out that both the public and private lights were deficient; and those I have communicated either by the officers of the company, the inspectors, or by letter.

2640. Have those complaints been brought before the notice of the Board by the members of the Board themselves?—They have.

2641. I believe, as a fact, the Board have not taken any public action in reference to this matter—the Gas Act of 1860?—No, they have not.

2642. Are you able to tell me the reason why?—When the Act was passed, the Board were desirous of appointing an efficient examiner—a chemical examiner—and I was directed to write to the vestries and Boards surrounding our district, to ask them to co-operate with us in the appointment of such a person; some of them said that they were appointing their own medical officer; the others had the matter under their consideration; but, in fact, nothing came of the negociation.

2643. *Chairman.*] No examiner was appointed?—None was appointed by our district.

2644. Mr. *Sargood.*] You were desirous of appointing some eminent man, in connection with other parishes?—We were.

2645. Will you tell me why the Board have not taken any action with regard to the complaints of individuals brought under their notice?—They were not satisfied with the Gas Act as it stood, and they thought it would be useless to take any steps about it.

2646. I believe the Board itself have had some report made to them, have they not, upon the subject of gas-lighting?—They have.

2647. And have they, in consequence of that report, communicated to the Corporation their particular views upon the subject?—They have.

2648. Have you that in your hand?——

2649. What may we call it?—It is a statement annexed to a report to the Board last month.

2650. Is that the thing that was communicated to the Corporation?—It contains the views of the Board.

2651. *Chairman.*] It is from the Westminster Board to the Corporation?—Yes.

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2652. Asking their action?—No; when this inquiry was about, we stated to the Corporation what our views were upon the deficiencies in the Gas Act of 1860.

2653. Mr. *Denison.*] Who is it by; is it by yourself?—No; by a committee of the Board appointed on this question; they submitted a report to the Board, and this was annexed to the report:—"The Board of Works for the Westminster district desire to represent as follows:— 1. That all legislation in regard to metropolitan gas should have for its object the early removal of such works beyond the limits of the metropolitan area, partly on account of the nuisance occasioned by the manufacture of gas, and partly on account of danger from explosion, as evinced by the recent accident at the London Gas-works; and, with reference to danger from explosion, that if gas-works be permitted to continue in crowded neighbourhoods, there will one day be such a calamity as will cast into shade all previous occurrences of a similar nature; 2. That if active measures for the removal of existing gas-works cannot for the present be taken, passive resistance to their extension should be offered by a refusal to grant powers to take additional lands or to raise additional capital; 3. That the parishes of Saint Margaret and Saint John the Evangelist form the Westminster district under the "Metropolis Local Management Act, 1855;" and that in the parish of Saint John the Evangelist is situate the large Westminster station of the Chartered Gas Company; and in the parish of St. George's, Hanover-square, where it adjoins the said parish of Saint John the Evangelist, are situated the works of the Equitable Gas Company, and that it is considered by the inhabitants of the surrounding neighbourhood a special grievance that gas should be manufactured and stored in Westminster for the supply of districts situated at long distances from the works; 4. That the means afforded by the Metropolis Gas Act, 1860, for testing the purity and illuminating power of the gas, are troublesome and inconvenient, and would in practice be found very costly if any action were taken against the companies, and that to exercise a proper and effectual control over the companies in these respects a highly efficient and competent officer should be appointed by Government, with power to make his own arrangements for insuring the proper manufactnre of the gas supplied, and whose duty it would be of his own motion to take steps for enforcing penalties where any had been incurred. He should also have power to station subordinates upon the works in the same manner as officers of the Board of Inland Revenue are placed at distilleries and elsewhere; 5. That the Metropolis Gas Act, 1860, does not contain clauses making it compulsory upon the gas companies to light the public lamps by meter while "The Reading Gas Act, 1862," "The Birmingham and Staffordshire Gas Act, 1864," and probably other Acts of Parliament, not only require the companies to light by meter, but direct that one meter to every twelfth lamp shall be deemed a sufficient average whereby to test the consumption of the whole; 6. That two of the companies lighting the Westminster district have declined to light the public lamps by meter unless the District Board of Works would consent to attach a separate meter to every lamp, and have further declined to permit the Board to light and extinguish the lamps unless the supply of gas were taken by meter; that the trouble and cost of attaching and attending to meters applied to every lamp has been ascertained to be so great as to render the adoption of such a system practically impossible, and that the District Board has therefore been without the means of readily ascertaining whether the public lamps have consumed the gas for which payment has from time to time been made, and has been prevented from adopting improvements, such as lighting and extinguishing with rods, instead of by means of ladders, or of economising in the consumption of gas, as it might have done if the supply of gas had been by meter, and the lamplighters had been directly in the employ of the Board; 7. That, having regard to the illuminating power and price of gas supplied to other larger towns, the former is insufficient, and the latter excessive, in the metropolis, giving as instances the following, videlicit:—

Town.	Illuminating Power of Gas in Standard Candles.	Price of Gas per 1,000 feet.
		s. *d.*
Birmingham	14	2 6
Liverpool	20	3 0
Manchester	22	3 2

8. That

8. That under the Metropolis Gas Act, 1860, provision is made that the dividends of the companies shall not exceed ten pounds per centum per annum, but that sufficient provision is not made by the said Act for watching over the interests of the consumers in matters relating to expenditure and financial arrangement, and that the consumers having after a manner a reversionary interest in the profits of the companies, have reasonable grounds for requiring that some control should be exercised over the companies in these respects."

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Mr. *Robert Richard Arntz*, called in; and Examined by Mr. *Sargood.*

Mr. *R. R. Arntz.*

2654. You are surveyor of the Westminster Board of Works?—I am.

2655. Has it been part of your business to take notice of the gas-lighting in that district?—It has.

2656. I believe you are supplied by the Chartered, the Westminster, and the Equitable?—Yes.

2657. How have you found the question of the lighting with regard to these companies as to illuminating power?—I have had no means of testing the illuminating power.

2658. I do not mean scientifically, but as to public repute or complaint?—As to public repute there have been complaints from time to time of the inhabitants with regard to the lighting.

2659. Has that applied more to one company than to another?—I think it has; I think it has applied more especially to the district lighted by the Western Company, but the complaint, I should say, has been general as to the light.

2660. Or rather as to the want of light?—Yes; but whether that has been due to deficiency of illuminating power or a deficiency of quantity I am not able to say.

2661. Have these complaints come under the notice of the Board of Works?—They have.

2662. Has anything been done for the purpose of remedying them, or if not, why?—Nothing more than occasionally writing to the companies.

2663. Have no more active measures than those been taken?—No.

2664. Can you give any reason why they have not, remembering the Act of Parliament and its provisions?—I think the short reason for that is this, that when the Act of 1860 was passed the Board was desirous that the supervision of the companies should be entrusted to a public officer of high standing; immediately after the passing of the Act the Board endeavoured to arrange with other parishes so as to appoint an officer of high standing, but from some cause the negotiation fell through, and the thing was never done. If I remember rightly, there was then some talk of appointing myself, but I felt that I was not a competent officer to discharge the duties, and that a scientific chemist was required, so that I declined, and the Board have never taken any further action in the matter, believing that, sooner or later, an inquiry such as this should take place, and that the thing would be put right.

2665. Do you consider that the remedies provided by the Act of 1860 are sufficient for the protection of the public?—I do not think so; I think them very troublesome and very complicated.

Cross-examined by Mr. *Denison.*

2666. I see that in 1860 you were in favour of the districting?—I was.

2667. You apparently are so still?—Yes.

2668. And you wished the vestries to concur in appointing officers of high standing, but they would not?—I believe that was so; I think they felt at the time that their arrangements were not sufficiently matured; at all events they did not concur.

2669. They were to pay him if he was appointed?—Most undoubtedly.

2670. I inferred from the other gentlemen that it was not so; he seemed to think that the Government was to pay?—That was before the Act was passed; before the Act of 1860 was passed the Board was desirous that the officer should be a public officer paid by the public.

2671. I understood him to say that it was since the Act?—No; before the Act; but subsequently to the passing of the Act the Board was desirous of agreeing with other parishes in appointing an officer.

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2672. Do you speak of the same Board as Mr. Jebb spoke of?—Yes.

2673. He says that in 1862 or 1863 he wrote to complain; then he went on to state about the applications to the vestries; was that before or after the complaints?—Long before; it was immediately after 1860.

2674. Then I suppose I may say that here has been no application to the vestries since the Act of 1860?—Only immediately after the Act of 1860.

2675. Nor any action on the part of the Westminster Board themselves?—No.

2676. Except, I suppose, towards the end of 1860 there has been absolutely no action whatever taken by the Westminster Board and the vestries that you are in communication with?—For the reasons I have assigned.

2677. Let us get at the facts first; it has been so, has it not?—It has been so.

2678. What are the reasons of the Board?—They are those that I stated at first; that, before the Act of 1860 was passed, the Board was desirous that an officer of high standing should be appointed by Government, who would take the thing in their own hands. Subsequently to the passing of the Act, that view being overruled, the Board negociated with other parishes, with a view of appointing an officer of higher standing and larger powers than a dozen comparatively small officers, working separately, could have. That negotiation fell through, and the Board were disappointed; they felt that the provisions of the Act were not satisfactory, and, as I say, did not appoint any officer, thinking that they would lie by; either that there would be no ground of complaint, or that, if there was, it would get put right by some such inquiry as this.

Re-examined by Mr. *Webster*.

2679. Has the Act of 1860 remedied the complaints?—No, I should think not.

2680. Notwithstanding the Act of 1860, do you still find cause of complaint?—There are complaints.

2681. Although you may be in favour of districting, are the provisions in the Act of Parliament sufficient to prevent the defects of districting, and insure protection to the consumers?—I think not.

2682. Your opinion is that the provisions are too troublesome and complicated?—Yes.

2683. Do you think that in that respect the Act requires amendment?—I do.

2684. More simple remedies?—Yes.

2685. Mr. *Lusk*.] The fact is that in your district there is no officer appointed?—No.

2686. And the public have no protection at all?—None.

2687. Mr. *Hartley*.] Who are to blame for that, the gas companies or the local authorities?—If there be blame, the local authorities. I do not say that there is blame; on the contrary, I say there is none; I say that they took a sound view when they laid by for this inquiry.

Mr. *Webster* said that that closed the question of the want of purity and illuminating power, the only other question being that of the price to the consumers.

Tuesday, 1st May 1866.

MEMBERS PRESENT:

Mr. Dutton.	Sir John Ogilvy.
Sir William Gallwey.	Mr. Paull.
Mr. Serjeant Kinglake.	Mr. Hastings Russell.
Mr. Lusk.	Mr. Staniland.
Mr. Morrison.	Sir John Trollope.

SIR JOHN TROLLOPE IN THE CHAIR.

Mr. *Samuel Wilkinson*, called in; and Examined by Mr. *Webster*.

2688. I BELIEVE you are a Solicitor at Walsall?—Yes.

2689. Are you also Town Clerk of the Borough of Walsall?—Yes.

2690. And Clerk to the Improvement Commissioners?—Yes.

2691. What is the district that is under the jurisdiction of the Improvement Commissioners of Walsall?—It is the whole of what would be called the town, not comprising the whole of the Parliamentary borough, nor the whole of the municipal borough, but such portion of each as may be properly called the town, and also a portion of an adjoining parish.

2692. What is the extent in point of population or area?—I am not acquainted with the area; the present population is about 45,000 or 46,000, that is of the entire borough.

2693. What are the Acts of Parliament upon which you are at present constituted?—An Improvement Act of 1848, and an Amendment Act of 1850.

2694. Have you power to erect gas works?—Yes; but that was under a very old Act, forty years ago.

2695. An Act of 1824, I think?—Yes, of 1824.

2696. Did you proceed to erect gas works under that Act?—Yes.

2697. What did you expend for that purpose?—It was a small affair, something under 5,000 *l.*; I rather infer that from that being the extent of the borrowing powers; it is long before I could have any personal recollection.

2698. Do you know, as a matter of history, what was the price then charged?—Yes; 12 *s.* 6 *d.* per thousand feet.

2699. The Act of 1848 gave you enlarged powers, did it not?—Yes.

2700. Did you increase your gas works under the Act of 1848?—Entirely new works were erected under that Act, the old ones being first sold.

2701. From time to time were improvements made?—From time to time.

2702. What capital did you spend under that Act?—Somewhere about 8,000 *l.* under the Act of 1848.

2703. What was the population in 1824?—I suppose it to have been somewhere about 7,000, but that is only a conjecture.

2704. What was it in 1848?—I should think it was then about 20,000; I am not quite sure, that is an estimate.

2705. I presume the increase of the works was accompanied by a considerable increase in the consumption of gas?—Yes; very considerable.

2706. And also a diminution in price?—Yes.

2707. In 1849 what was the price?—Seven and sixpence.

2708. In 1850?—Five shillings.

2709. In 1854?—Four and eightpence.

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2710. In 1858?—From 1854 to 1858 the price was 4*s.* 8 *d.*, with one variation; during one year it was 4*s.* 2*d.*

2711. In 1825, I think, another company was formed in that district?—A Birmingham company took powers to light a number of other places, as well as Walsall, Birmingham being the main place.

2712. I believe that company had a subsequent Act, and had power to raise a very large sum of money?—Yes; its borrowing powers and share capital altogether amounted to nearly 700,000*l.*; there were three prior ones, the first in 1825, the second in 1845, and the third in 1858.

2713. Making an aggregate capital of about 700,000*l.*?—Nearly.

2714. What was the dividend limited to under that Act?—I believe it was $7\frac{1}{2}$.

2715. What was the maximum price of gas?—At that time, I think, the price was 4*s.* 8*d.*

2716. The Act limited the dividend to $7\frac{1}{2}$, and the price of gas, I think, about 4 *s.* per thousand?—Yes, 4*s.*

2717. Has there been competition between these two companies in that district?—Yes; in so far as Walsall is concerned, not as to some of the other places.

2718. What has been the effect of that?—The effect in so far as Walsall is concerned has been this: it should be stated that until after 1858 the Birmingham Company never came to Walsall, although they had powers to do so; in 1859 they laid their mains about the streets of Walsall, and in anticipation of what might be the effect of that, the Walsall Commissioners, before the Birmingham Company could get their plant into operation, reduced their price from 4*s.* 8 *d.* to 3*s.* 4*d.*

2719. *Chairman.*] The old company, do you mean?—The old company, consisting of the town Commissioners.

2720. Mr. *Webster.*] Was that in 1859?—That was in 1859, I think.

2721. Three shillings and fourpence was the price if the quantity consumed was under 25,000 feet a quarter?—Yes.

2722. Was there a less price for a larger quantity?—Yes.

2723. What was that?—Three shillings.

2724. Three shillings for 100,000 feet and above 25,000 feet?—Yes, and 2*s.* 10*d.* for over 100,000 feet.

2725. These being the charges in 1859, how long did they continue?—On the 1st of October 1862 the Walsall Commissioners again reduced the price to 3 *s.* below 25,000 feet, 2 *s.* 10 *d.* between 25,000 and 100,000 feet, and 2 *s.* 8 *d.* over 100,000 feet.

2726. At that time, what was the charge by the Birmingham Company—in 1863?—The figures I have given apply to 1862.

2727. They were afterwards reduced?—Yes; they were to continue for one year; then, in October 1863, the prices were reduced again to 2 *s.* 10 *d.* for under 25,000 feet, 2 *s.* 8 *d.* between 25,000 and 100,000 feet, and 2 *s.* 6 *d.* above 100,000 feet; then again, in 1864, they were reduced to 2 *s.* 8 *d.* below 25,000 feet, 2 *s.* 6 *d.* between 25,000 and 100,000 feet, and 2 *s.* 4 *d.* for above 100,000 feet. At those rates they now stand.

2728. The present prices, then, are 2 *s.* 8 *d.*, 2 *s.* 6 *d.*, and 2 *s.* 4 *d.*, for under 25,000 feet, under 100,000 feet, and over 100,000 feet?—Yes; and they have been in operation rather over a year and a half.

2729. What were the charges of the Birmingham Gas Company in 1862, up to January 1863?—4*s.* per thousand to all customers to the 1st of January 1863.

2730. Were they then reduced?—On the 1st of January 1863 they were reduced to 3 *s.* 9 *d.* per thousand under 25,000 feet, 3 *s.* 4 *d.* between 25,000 and 100,000 feet, and 2 *s.* 11 *d.* over 100,000 feet, subject to a discount; I ought to say, on quarterly payments in cash.

2731. Mr. *Morrison.*] Is this cannel gas or common gas?—Common gas.

2732. Mr. *Webster.*] Of what is it made?—It is made from the best Derbyshire coal and the best North Staffordshire coal; and the Birmingham Act of 1858 makes 14-candle gas imperative.

2733. I think, by the accounts you have given, you have been always below the

the Birmingham Company?—Perhaps, before I answer that, I should, in all candour, mention the further reduction by the Birmingham Company, on the 1st of January 1864, to 3*s.* 4*d.*, 3*s.*, and 2*s.* 8*d.*, as against our charges of 2*s.* 8*d.*, 2*s.* 6*d.*, and 2*s.* 4*d.*

2734. Does it appear from the statement that you have given, that you have always been below the Birmingham Company?—We have always been below their nominal prices, and the prices they have charged everywhere, except at Walsall; but, in order to enable them to do business at all in Walsall, though they have preserved their nominal price, they have taken off a discount, so as to make their charge substantially equivalent to ours, charging higher everywhere outside the district in which we compete with them.

2735. May I put it in this way: that contrasting the consumer in Birmingham and the consumer at Walsall, has the consumer at Birmingham been paying a higher charge than the consumer at Walsall?—Undoubtedly.

2736. By about the extent of the figures you have given us?—Yes.

2737. The Birmingham consumer has been paying during all these years, and is now a higher price than the consumer at Walsall where you have competition?—Undoubtedly.

2738. Mr. *Woods.*] Do the commissioners charge one uniform rate for their gas? They have not two districts, a dear one and a cheap one?—No, nothing of the kind.

2739. *Chairman.*] They give the gas at cost price to the consumers?—In one sense they may be said to do so, but not in another, inasmuch as we have never failed to have a very large profit, but that profit we have used in reducing our capital debt from time to time.

2740. Mr. *Webster.*] Where are the Birmingham works?—They have two, one within the borough of Birmingham, and another at West Bromwich; they may have a third for anything I know, but I know that they have those two.

2741. Comparing this gas supplied at Walsall, in competition with the commissioners, do you know where it comes from?—I believe it is manufactured at West Bromwich.

2742. What is the distance of West Bromwich?——

2743. So that the Birmingham company are sending gas four or four and-a-half miles, and competing with you at Walsall?—Yes.

2744. I judge from what you have said that the Walsall commissioners have found their operations commercially successful?—Yes.

2745. Can you hand in to the Committee a statement, showing the financial position from 1858 down to the present time?—I have no separate statement, but I can shortly give the figures. In 1859, the capital amounted, omitting fractions, to 18,600 *l.*, in 1860 to 20,500 *l.*, in 1861 to 22,000 *l.*, in 1862 to 23,150 *l.*, in 1863 to 25,100 *l.*, in 1864 to 29,000 *l.*, in 1865 to 33,000*l.*, and now it is somewhere about 35,000 *l.*

2746. The capital account has increased from 1859, when it was about 18,500 *l.*, to 33,000 *l.* in the present year?—Yes.

2747. Have any amounts been paid out of revenue to the capital account in each of those years?—Yes, I can give the figures as they are successively swollen by those payments; the sums up to 1860, transferred from the revenue to the capital account, amounted to 5,350 *l.*

2748. In 1865, was the total amount of capital expended on works, and so on, 32,852 *l.*?—Yes.

2749. What was the amount due on loans at that time?—£13,450.

2750. What was the amount paid out of profits?—£19,402 9*s.* 7*d.*

2751. Then, I believe, there is a further reduction to be made for small amounts owing?—Yes, some small matters.

2752. What is the net amount paid off profits during the whole period?—£. 19,350.

2753. Do you know any place where the gas is lower than at Walsall?—Not one in the Midland districts; I think I have heard of one place somewhere; but I forget where it is.

2754. Mr. *Woods.*] How is the interest on those loans paid?—Out of the Revenue account.

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2755. In addition to these reductions of capital?—Clearly.

2756. *Chairman.*] Have you any sum of money over and above the sums paid in reduction of capital that you apply to any other purposes in the borough?—Nothing, except what is properly applicable to revenue.

2757. Your Town Commissioners do not apply your surplus profits to other purposes; say, to water or any other works?—We did once; in addition to these repayments of capital, one year, a sum of 2,000*l.* was transferred from the revenue account to the general purposes of the local rates.

2758. Do you continue that practice?—We only did it once.

2759. How many years ago is that?—Eight or nine years ago; perhaps longer.

2760. Then you now simply pay off your capital account out of surplus profits?—That is the effect of it, but perhaps I ought to explain that our borrowing powers do not exceed 15,000*l.*; it is manifest therefore that we must either have gone for further borrowing powers, or increased our capital account by this annual transfer from the revenue account, and that we have done rather than go to Parliament for increased powers, and spending money in getting another Act; we have chosen to have the price at such a rate as would enable us, low as it is, to effect our extensions.

2761. Mr. *Webster.*] Do you contemplate paying off the whole of the debt?—That will depend entirely on whether we want to extend still further; sometimes we pay off a mortgage; at other times extensions are needed, as for instance last year, when we put up a very much larger gas-holder than anything we had before; that we have done entirely out of profits, but probably during the next two or three years, if no unforeseen necessity should arise, we should pay off mortgages instead of applying the amounts to extensions.

2762. *Chairman.*] What the learned counsel wishes to show is, that at those prices in 1864, of 2*s.* 8*d.*, 2*s.* 6*d.*, and 2*s.* 4*d.*, there is still a large margin of profit?—Unquestionably.

2763. Mr. Serjeant *Kinglake.*] You first of all supply gas at a low rate, and out of profits you create new capital instead of borrowing?—Yes.

2764. Mr. *Webster.*] You told us that you are the lowest town in the Midland district?—I believe so.

2765. And what has been the effect of this reduction in price from time to time on the consumption?—It has increased it.

2766. And during the whole of this time you have been in competition with the Birmingham Company?—Since 1859.

2767. You have told us that the result of this reduction in price has been continued increase in consumption; can you give the Committee the consumption in 1857 in June and December?—In June the daily average consumption was 34,000 feet, and in December 140,000 feet.

2768. And what was the consumption in 1860?—In June 65,000, and in December 230,000 feet.

2769. And in 1865?—In June 95,000 feet, and in December 350,000 feet.

2770. I believe in 1864 there was an application by the Birmingham Company to extend this district?—Yes.

2771. Did you oppose that on behalf of the Commissioners of Walsall?—Yes.

2772. They also sought for further powers, I believe?—Yes.

2773. Has your experience shown that the Commissioners can supply gas cheaper than a company?—Clearly so; because we do not want large dividends.

2774. Was there a contest between the Commissioners and the company in opposition to this Bill?—Yes.

2775. What was the result of it?—The Commissioners opposed the extension of the Birmingham Company's powers over Rushall, a portion of which forms part of the town of Walsall.

2776. Was the result of that application to Parliament that the Committee thought fit to recommend that Rushall should be taken out of the Birmingham district, and that you, the Commissioners, should purchase their mains?—Yes, except as to a small portion that the Birmingham Company had already laid.

2777. Were certain conditions, as regards illuminations, put upon you?—None were put upon us.

2778. Upon the Birmingham Company, in that Act which you opposed?—Yes.

2779. What were the conditions as regards illuminations?—There was to be 14-candle gas.

2780. What is the illuminating power of your gas?—It has been 15 candles during the last few weeks.

2781. Sir *John Ogilvy.*] By statute?—We are not guided by statute; certainly not by our private Act.

2782. *Chairman.*] What is the average lighting power?—I should think the last year or two the average has been 13 or 15; it has been gradually getting better; for some weeks past it has been 15.

2783. Mr. Serjeant *Kinglake.*] Do you measure it by an Argand burner?—I do not measure it; I have got this from the manager.

2784. Do you know how it is measured?—I do not know how it is done.

2785. Mr. *Webster.*] What has been the result of your experience, as Commissioners, in the supply of gas as regards the benefit to the public?—That the public undoubtedly get it much cheaper.

2786. Is the Birmingham Company a very wealthy company?—Yes.

2787. Probably one of the wealthiest in the kingdom?—One of the wealthiest in the Midland districts.

2788. You have been enabled to compete with them and reduce the price of gas in the way in which you have described it?—Yes.

2789. *Chairman.*] And, I suppose, from the reduced price, you get more consumers; is that so?—Undoubtedly.

2790. And that extends your business and your profits?—Yes.

2791. Has there been a contribution in reduction of rates at any time from the profits of the gas?—Yes, one sum of 2,000 *l.*, which I mentioned just now.

2792. Mr. *Webster.*] If circumstances should remain as they are, do you anticipate being able to pay off the whole of your debt?—Unless some unforeseen circumstance should arise.

2793. If circumstances remain as they are, you anticipate, from past experience, that you will be able to pay off the whole debt?—I can scarcely say past experience will lead to that, because it has frequently led to extensions, and may so lead us.

2794. At all events, is the present commercial condition of the undertaking profitable enough to enable you to pay off some of the debt, or to reduce your charges?—We shall do both, to some extent, I have no doubt, reduce the charges again and pay off some of the capital.

2795. From the experience you have had at Walsall have you any doubt that works in the City, established on a similar principle, would be productive of a like result?—I do not think it is possible to doubt it.

Cross-examined by Mr. *Cripps.*

2796. Suppose these unforeseen circumstances should arise, who will suffer from them; the ratepayers of Walsall?—You must describe to me what you mean.

2797. It is put to you that if no unforeseen circumstances should arise you will go on with the reduction. Now, suppose some accident should happen, I suppose the cost will be paid out of the rates?—I should like you to give me some estimate; I could not answer the question in that way. Undoubtedly, in the case of a small accident, we should not have to ask the ratepayers for a penny.

2798. You do not want to put by any reserve fund, because you have the rates of Walsall to aid you in a case of difficulty?—We are putting by a very large reserve fund year by year, in point of fact.

2799. Also in point of fact there is no actual reserve fund than writing off the capital?—There is no other reserve fund.

2800. The whole matter being in point of fact in the hands of the ratepayers, a speculation of the ratepayers?—Yes; and a very good one too.

Mr. *S. Wilkinson.*

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2801. If any accident happens the ratepayers must make it good?—If the work was blown up altogether; the ratepayers are the proprietors.

2802. I suppose you have some documents or some books from which these amounts that you have produced are extracted?—Yes.

2803. And those can be produced?—Yes, I have them here.

2804. Do they go back to 1859, at which time I see the capital account is about 18,500 *l.*?—Yes.

2805. Have you any account to show what was the cost of the works originally?—We have an estimate.

2806. Have you any contemporaneous document which will show what your works actually cost the ratepayers when they put them up?—I should first explain that there have been two works; an old work, under the Act of 1824, that was sold, and then we erected a new one.

2807. What was the cost of the first work?—I can give no particulars as to that, but as to the one in 1848-9 we have documents to show the entire expenditure.

2808. What the original cost was you cannot tell, but you paid something to take to the works?—No, we did not pay anything to take to them; they belonged to the commissioners of that day.

2809. But was there anything to show what the charge had really been for the whole of the works?—No, I do not know that there was; I cannot say whether there was or was not.

2810. You would know whether there is any document which would throw any light upon it?—I should think there is.

2811. Have you it here?—No; you are speaking of a period 45 years ago, of which I could personally know nothing.

2812. In 1848 you say that 8,000 *l.* was expended?—Somewhere about that, in 1848 and 1849 together.

2813. Is that all that any account you have shews to have been expended at that time?—Yes, I should think so.

2814. Is there anything at all which shows what the works actually cost?—Yes, there are the contracts.

2815. Have you those here?—No, I have not; I have got what is quite as good—the public accounts, which I can produce.

2816. I want to know if you can give any evidence of what they cost?—To the best of my belief (and I am sure I am not far wrong), the figures I have given are correct.

2817. We want the original actual capital expended in works of this kind?—I tell you there was the debt for the old works, and the capital laid out in 1848-9, than which to my mind nothing can be more clear; the figures speak plainly themselves, 8,000 *l.* and between 4,000 *l.* and 5,000 *l.*

2818. Then when you begin in 1859 your capital account shows 18,500 *l.*; you have not given any figures which show how that was expended, because you have given the cost 5,000 *l.* and 8,000 *l.*, all included?—Yes.

2819. There is, I suppose, in existence some document which you could show as to how that 18,000 *l.* was applied?—Yes, every hundred of it.

2820. In your estimate throughout you deal with a concern which has an assumed capital such as you have given us in these different years, that is all?—Yes.

2821. Have you anything in your books which will shew us with anything like accuracy the outlay and expenditure of any of these years?—Yes, the whole.

2822. Those books can be produced?—Yes.

2823. In 1860 or 1861, for instance?—Yes.

2824. The amount of capital is shown to be 32,000 *l.*; is that to be increased by the 19,350 *l.*?—No.

2825. You mean that what you reckon now as your capital is 32,852 *l.* less by 19,300 *l.*?—Yes.

2826. That is, your total capital now, if you were a company, would be estimated at something over 12,000 *l.*?—I call it our debt, 13,000 *l.*

2827. Will you give me the documents for 1859 and 1860. Are they printed?—Yes (*producing the same*). Here is the treasurer's published account for 1861, and here is the auditor's account (*producing the same*).

2828. Are

2828. Are you under statutable restrictions as to any particular amount of illuminating power?—No.

2829. Are you or have you been under any restrictions whatever as to the purity of your gas?—No, except that of being side by side with another company in every street.

2830. I take it for granted that you are under no penalties for the breach of any restrictions?—I think not; I never heard of any, except the penalty of losing business.

2831. What were the prices of your coals; you use the Staffordshire coal, I suppose?—We have used a good deal of Derbyshire, now we are getting it mainly from North Staffordshire; I can give you the average price for 10 years past, or for one or two years.

2832. I suppose you have them for each year?—Yes; in 1856 the price was 10*s.*; in 1857, 12*s.*; in 1858, 10*s.* 2*d.*; in 1859, 9*s.* 10*d.*; in 1860, 11*s.* 2*d.*; in 1861, 9*s.* 3*d.*; in 1862, 10*s.* 1*d.*; in 1863, 9*s.* 9*d.*; in 1864, 11*s.* 5*d.*; in 1865, 11*s.*

2833. I have here, your receipts and expenditure for 1860 and 1861; I find that your coals cost you 3,852*l.*, and that the residual products sold amounted to 1,911*l.* for coke, and 333*l.* for tar, leaving the total cost of your coal for that year about 1,500*l.*?—If your sums are done correctly, that balance is right.

2834. Can you tell me the number of tons of coal used in that year?—I do not think I can, because our year commences in September; it goes from September to September.

2835. Can you tell us how many tons of coal were consumed?—I am afraid I cannot with certainty, because our contracts are often exceeded.

2836. Mr. *Webster.*] Your average price of coal in 1861 was 9*s.* 3*d.*, and the amount paid 3,852*l.*; that will give you the number of tons?—Yes.

2837. Mr. *Woods.*] I see by the accounts that you have laid before the Committee, in the year 1864, the capital is stated at 28,920*l.*; now, was it your custom in paying interest, to pay it upon the gross capital or upon the net; did you pay upon the 12,000*l.*, or upon the 28,000*l.*?—Only upon the 12,000*l.*

2838. Then that tells very much against you?—I thought it told in our favour.

2839. It depends on which side you look at it; going back to 1859, there is a nominal capital of 18,578*l.* What proof is there that that was the cost of the works; is there any proof to your own mind; does that represent the cost of the works, or does it represent a much greater sum, which has been reduced by previous profits?—That is intended to represent, and I have no doubt that it does pretty nearly, the actual cost up to that time.

2840. It is not a greater sum, reduced by the profits of previous years?—No; at that time the debt would be a less sum than that, and the interest paid for the revenue account would be on a less sum than that.

2841. Mr. *Lusk.*] You are the town-clerk of Walsall, I believe?—Yes.

2842. Then, of course, you know thoroughly all the accounts of the gas-works?—Yes.

2843. The sum and substance of your evidence is, that you can produce good gas at 2*s.* 8*d.*, 2*s.* 6*d.*, and 2*s.* 4*d.*?—Yes.

2844. And leave a good profit to the community?—Undoubtedly; a profit on our last year's operations of about seven per cent. upon the total capital; and I now refer to the cost, not to the existing debt; a profit equivalent to seven per cent, with a reserved fund for depreciation of nearly two per cent.

2845. Speaking of circumstances that might transpire, I suppose you referred to the possible increase of population, so that you might have to increase your works again?—Yes; or possibly there might be an accident.

2846. That is one of the things which you referred to?—Yes.

2847. I suppose you are aware you can insure against accident?—We have never done so.

2848. That insurance companies put in the policies of those who insure with them "Explosions by gas included"?—We have never had that under our consideration; whether that would apply to our plant or not, I cannot say,—I should doubt it.

2849. That is one of the contingencies you referred to; accidents happening to some persons' houses?—Yes; barring any accident, I have no doubt that, in a few years, the whole debt would be cleared off.

Mr. *S. Wilkinson.*

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2850. Mr. *Staniland.*] What interest do you pay upon borrowed money?—Mostly, four per cent.

2851. Your coal averages, I think, 9*s.* a ton?—Nearer 10*s.* would be the average, taking the last eight or ten years; a great deal of our coal, of late years, has come from long distances, Derbyshire and the extreme north of Staffordshire.

2852. Sir *William Gallwey.*] Are your works erected on ground that you had to purchase?—We had to purchase it.

2853. You had no advantages whatsoever?—None whatever.

2854. Have you any complaints of the quality of the gas?—We have, occasionally; but not more than is ordinary in such matters.

2855. Mr. *Staniland.*] You say you have a great deal of Derbyshire coal?—From the neighbourhood of Chesterfield and Staveley; we have a good deal of our coal from near Stoke-upon-Trent.

2856. What do you make of your coke?—That I can scarcely speak to.

Mr. *Webster.*] It appears from this return, that the coke is sold for one-half what the coals cost.

2857. Mr. *Staniland.*] Do you think that would be a fair estimate to take of coke, at one-half the cost of coal?—I am not sufficiently up in that to give an answer.

2858. Sir *William Gallwey.*] Do you supply it like gas companies do here in London, at a number of private houses?—A great number.

2859. And they take it into their domestic consumption?—Oh, yes; very largely.

2860. For private houses?—Very largely.

Vide Appendix.

Mr. *Webster* handed in documents showing the financial position of the Walsall Gas Company, and also the average daily consumption of gas in June and December, from the year 1857 to 1865.

Adjourned till Thursday, at Twelve o'clock.

Thursday, 3rd May 1866.

MEMBERS PRESENT:

Sir William Gallwey.	Mr. Paull.
Mr. Hartley.	Mr. Hastings Russell.
Mr. Serjeant Kinglake.	Mr. Staniland.
Mr. Lusk.	Sir John Trollope.
Mr. Morrison.	

SIR JOHN TROLLOPE, IN THE CHAIR.

Mr. *John Nanson* called in; and Examined by Mr. *Webster*.

Mr. *John Nanson*.

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2861. I BELIEVE you are Town Clerk of the city of Carlisle?—Yes.

2862. And also Clerk to the Local Board of Health?—Yes.

2863. How long have you held these offices?—Since 1846 Town Clerk, and since 1850 Clerk to the Local Board.

2864. Has the Local Board the power of manufacturing gas?—The Corporation has.

2865. Does the Corporation supply the lights of the town under arrangement with the Local Board?—Yes.

2866. When did the Corporation begin to manufacture gas?—They made an arrangement to buy up the shares of the old gas company in 1846, and they got an Act of Parliament in 1850 transferring the works to the Corporation.

2867. One question before we come to that; there had been an Act in 1820?—That was an Act incorporating a gas company in Carlisle.

2868. Do you know what was the charge for gas from 1820 to 1828?—From 1820 to 1828 the consumers were charged by burner.

2869. At what rate?—I do not remember; but I think in 1828 they were first charged by meter, at 25 *s.* per thousand cubic feet.

2870. Then first they began to charge by burner, and then by meter, at 25 *s.* per thousand feet?—Yes.

2871. Of course, the price has been reduced from year to year?—From year to year.

2872. And very soon it came down to 6 *s.* 8 *d.*?—It did not come down to 6 *s.* 8 *d.* till about 1846, or just before the Corporation took the works.

The *Chairman* suggested that it would be better to confine the Witness to what had happened subsequently to the passing of the Act.

2873. Mr. *Webster*.] Then we will just come down to the time when the Corporation took the works; at the time when the Corporation took the works what were the consumers paying?—6 *s.* 8 *d.*

2874. In what year did the Corporation take to the works?—The Corporation got possession, through trustees, in 1846.

2875. At the time the Corporation took to them was there a good deal of dissatisfaction at the price of gas?—Yes; both to private consumers, and also to the public lamps, which were lighted by the Corporation under a Lighting Act.

2876. I believe a new company had been proposed?—Yes.

2877. Do you know what was the dividend paid by the old company when

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the Corporation took the works?—For a good many years it paid 5 per cent.; then, in 1831, $7\frac{1}{2}$ per cent.; in 1832, 8 per cent.; and in 1833, 20 per cent. was added to the capital, making each share of the nominal value of 30 *l.*; then, 8 per cent. was paid until the dividend got to 5 per cent. for the half-year.

2878. We do not want to go further into those details. Just tell us what has been the result of the Corporation taking the works?—There was an immediate reduction of 5 *s.* per thousand cubic feet, and reductions have gone on since, and there has been an immense increase in the consumption of gas.

2879. How much money has been raised and spent by the Corporation?

The *Chairman* said, while they were upon the question of price, the Witness might as well state what was the present price.

2880. What is the present price?—The present price is 3 *s.* per thousand cubic feet.

2881. Has there been a gradual reduction from the time the Corporation took the works?—Yes.

2882. A gradual reduction in price, and an increase in consumption?—An immense increase in consumption.

2883. What is the present population of Carlisle?—At the last census it was 29,418; now, it is upwards of 30,000.

2884. Has it increased much in population since the Corporation took the works?—About 5,000.

2885. How much money have the Corporation raised and spent in respect of the gas works?—The Corporation raised, under the Act of Parliament for transferring the gas works to the Corporation, 18,000 *l.*, to pay for the cost of the purchase of the gas works, which was given by mortgages or bonds to the shareholders, who were paid at the price of 43 *l.* per share, a 25 *l.* share; and the balance to pay for the Act of Parliament, and for some extensions.

2886. Then that 18,000 *l.* represents the purchase of the interest of the old shareholders?—Yes; and all expenses of transfer.

2887. What is the debt now due on the gas works?—The debt now due is 12,709 *l.*

2888. How has that reduction been effected?—It has been effected out of profits.

2889. Mr. *Morrison.*] Did that 43 *l.* include a sinking fund to the old shareholders?—The shares in the old gas company were 25 *l.* shares; they were bought up by the Corporation at 43 *l.* per share, each shareholder agreeing to take a mortgage from the Corporation at 5 per cent. for 43 *l.*, or that sum multiplied by the number of shares he held, and those have been from time to time paid off.

2890. Paid off out of the surplus?—Paid off out of profits.

2891. Mr. *Webster.*] You have told us that there has been this reduction of price, and a large increase of consumption; do you conceive the public of Carlisle have benefited very much by the Corporation having had the gas works in their hands?—I do not think there is a single dissentient opinion in Carlisle as to that now.

2892. What was the consumption in 1846?—It was 11,000,000 cubic feet.

2893. And what was it in 1866?—71,000,000 cubic feet.

2894. You have told us that the cost to the consumers has been reduced gradually, from 5*s.* to 3*s.*, at which it now stands; has the price to the public lamps been also reduced?—Yes, considerably; there has also been an increase in the number, and they have been lighted for a longer period.

2895. Reduced in price, increased in number, and lighted for a longer period?—Yes.

2896. Now, in addition to this reduction in the capital or debt, we will call it, from 18,000 *l.* to 12,000 *l.*, has there been any payment for public improvements out of the profits?—There has been nearly 8,000 *l.* paid over to the Corporation, to be expended in improvements in the purchase of property, and other things.

2897. So that, if all the profits had gone to the reduction of the debt, you would have a debt now of only about 4,000 *l.*?—Yes, and there has also been 2,000 *l.* set aside as a reserve fund, to meet expenses of extensions of works; or,

or, if not required for that, ultimately it can be applied in further reduction of the debt.

2898. So that your actual debt, taking assets, would now amount to about 3,000 *l.*?—Yes.

2899. That is, if all the profit that is made had gone to gas?—Yes.

2900. Now, you have given us the quantities, 11,000,000 cubic feet in 1846, and 71,000,000 cubic feet in 1866; what was the annual revenue in 1846?—In 1846 it was 2,875 *l.*

2901. The price then being 6 *s.* 8 *d.*?—Yes.

2902. What was the revenue in 1866?—9,056 *l.*

2903. The price being how much?—The price being 3 *s.*

2904. What was the number of public lamps in 1846?—423.

2905. What in 1866?—698.

2906. What the number of lamps lighted in 1846?—The number of lights in 1846 was 212, and in 1866, 330.

2907. What was the charge per lamp, per night, for each single jet in 1846?—It was 1·32, or 1 3-10ths of a penny.

2908. And what in 1866?—·95, or 9-10ths of a penny.

2909. Was there any difference made in the charges of what you call the flat flame and the batswing?—The flat flame 1·95, or nearly 2 *d.* in 1846; in 1866, it is 1·27, or 1¼ *d.*; the batswing in 1846 was 2·44, say 2½ *d.*; in 1866, it is 1·6, or about 1½ *d.*

2910. So the batswings have been reduced about one half?—Yes.

2911. What was the cost of coals in 1846?—In 1846 it was 6 *s.* per ton.

2912. What in 1866?—9 *s.* 6 *d.*

2913. Stokers' wages in 1846?—2 *s.* 4 *d.*; and in 1866, 3 *s.* 6 *d.*

2914. Labourers' wages?—Labourers' wages in 1846, 2 *s.*; in 1866, 2 *s.* 6 *d.*

2915. What were the permanent assets in 1846 and 1866?—In 1846 they were 11,665 *l.*; in 1866, 27,029 *l.*

2916. What has been deducted from permanent assets for depreciation?—£. 13,557.

2917. Looking at the experience of Carlisle, have you formed a strong opinion as to whether the supply of gas should be in the hands of a public body?—Yes; it is the most proper body in Carlisle for such a purpose; we realise a large revenue from it; it is one of the best properties of the Corporation.

Mr. *Burke* said he must ask the Committee if this evidence was pertinent to the inquiry.

The *Chairman* said the Committee could not draw any particular analogy between a city holding 30,000 inhabitants and a city holding 3,000,000.

2918. I would ask the witness one question, what is the illuminating power of your gas; do you know in how many candles?—Sixteen candles is the illuminating power; there is a photometer and a testing apparatus.

2919. Mr. Serjeant *Kinglake.*] What coal do you use?—The coal is from the east of Carlisle, and the Northumberland coal field, and some cannel coal.

2920. *Chairman.*] Is it mixed for use?—A little cannel coal is used, but it is principally the Northumberland coal.

2921. Do you speak of Newcastle coal?—The whole district, from about eighteen miles east of Carlisle to Newcastle; there are collieries along the whole line.

2922. Along the line of railway?—Yes.

2923. You say you have the photometer to ascertain the quality of your gas; what is the quantity of sulphur per hundred cubic feet?—There is a double set of purifiers; the crude gas is first passed through oxide of iron, which takes out all the sulphuretted hydrogen; after which, it passes through hydrate of lime, which removes the carbonic acid gas.

2924. You use the double purifier, the oxide of iron and the hydrate of lime; you use both processes?—Yes.

2925. Mr. *Webster.*] You told the Committee, I think, that 7,690 *l.* had been paid to the Corporation; what are the convertible securities in 1866, as compared with 1846?—In 1846, the amount was 3,814 *l.*; in 1866, 10,842 *l.*

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2926. I believe the Corporation are so well satisfied with having purchased the gas works, that they have made arrangements for the purchase of the water works also?—Yes.

Cross examined by Mr. *Burke.*

2927. I do not know what you mean by convertible securities?—The permanent assets are the buildings, and the convertible assets are the stock, all the fittings, coal, and pipes.

2928. Very good; now, you have given evidence about the illuminating power and the purity; I suppose that is hearsay evidence?—Yes; I have ascertained it from the manager of the works.

2929. It is not your own knowledge?—No; I am not a gas engineer.

2930. Quite so. Again, under what control is the Corporation with reference to testing their gas, either for illuminating power or for purity?—Under none; there are no provisions in their Act, which was passed in 1850.

2931. Practically the public have no control over them in their operations at all?—No.

2932. Before they took these works, they thought it reasonable to buy up the shares of the gas company?—Yes.

2933. At the market value?—It was a little below the market value; it was what had been the market value; because the prospect of a new company being started, and getting first-rate security from the Corporation, disposed the shareholders to come to reasonable terms.

2934. By arrangement?—A number of the inhabitants entered into an arrangement to buy up the shares in this way for the Corporation till an Act could be got, and to give their personal security to the shareholders.

2935. Then, you gave the old company what they considered an adequate and fair price for the purchase of their property before you had works of your own?—What a considerable number considered was; there were a certain number of them, I think, holding from 40 to 50 shares, who stood out, and who filed a bill in Chancery to try and prevent the arrangement being carried out; ultimately, they were glad to come in.

2936. And the 25 *l.* share was bought at 43 *l.*?—The 25 *l.* share was bought at 43 *l.*

2937. That company being the first started there, they have borne all the risk of whether, as a speculation, it would pay or not?—Yes.

2938. So long as it did not pay, there was no desire on the part of the Corporation to take it?—It paid, I think, from the very first.

2939. I think you said it paid something like five per cent.?—The works were only started in 1820, and the first year's dividend paid, in 1821, was five per cent.; and they continued that dividend for four more years.

2940. It was only when they became successful that the Corporation thought it expedient to get possession of their property?—It was more to prevent the disputes that were arising as to the lighting of the public lamps.

2941. You say reductions have gone on; do you not know that similar reductions have been going on in almost every town?—Oh yes.

2942. Whether lighted by the Corporation or by a company; do you know what has taken place in Liverpool?—I have heard there is a considerable reduction there.

2943. With the increase of population, and with the increased use of gas, it can be sold cheaper, can it not?—Oh, of course.

2944. There is only one other question I have to ask; do you keep a total and separate account for the gas, as separated from your Corporation account?—Quite distinct.

2945. For instance, suppose streets be broken up for gas purposes, who does it?—The Gas Committee, as it is called, pays for it.

2946. Are the streets re-instated to an account set against gas?—They are re-instated by the Gas Committee, or they are done by the City Surveyor, and charged to the Gas Committee; it appears in their accounts.

2947. Is it so; are all those charges made to the gas accounts, or are they mixed

mixed with the Corporation accounts for the repairs of the streets?—They are printed together with the Corporation accounts, but they are quite distinct. Mr. *John Nanson.* 3 May 1866.

2948. They are put in the gas account?—They are put in the gas account.

2949. Mr. *Paull.*] I should like to ask what the cost of the coal is that is used at the works at Carlisle?—9 *s.* 6 *d.* now.

2950. Mr. *Staniland.*] Have you had any complaints of the impurity of the gas, or of the quality?—None whatever.

2951. Did you before the Corporation took it?—It was considered good gas then.

2952. Were there complaints then?—There were complaints.

2953. And there are none now?—I have never heard of any.

2954. From what does that arise?—From the Corporation looking well to it; and there is a very good manager.

2955. You think there is no ground for complaint?—No ground whatever; it is considered most excellent gas.

Mr. *Edward Rendle,* called in; and Examined by Mr. *Hoggins.*

2956. You reside at Portland-terrace, Lower-road?—Yes. Mr. *E. Rendle.*

2957. You are a vestryman of the parish of St. John's, Horsleydown?—I am.

2958. And a member of the District Board of Works of St. Olave's?—Yes.

2959. Also a large ratepayer in Bermondsey and Rotherhithe?—Yes.

2960. Have you given considerable attention to the supply of gas in the Metropolis?—I have.

2961. At a meeting of the St. Olave's District Board, in February 1865, were you appointed with Mr. Tolhurst a delegate of the Board to represent that body at any meeting of other metropolitan deputies?—I was.

2962. Was there a public meeting of consumers held in the parishes of St. John's, Bermondsey, and Rotherhithe?—Yes.

2963. Were you also selected as one of the deputation from the private consumers to meet the directors of the Surrey Gas Company?—Yes.

2964. That company is the only one in the district of St. Olave's; if it has a monopoly of that district and Rotherhithe, and partly supplies Bermondsey?—Yes; and it also supplies the parish of Deptford.

2965. Was there a complaint made against the Surrey Gas Consumers' Company at the meeting you have referred to, respecting the price at which gas was charged by the company?—The attention of the meeting was confined to the question of price.

2966. Is the position of the gas company peculiar?—Yes; very peculiar.

2967. The works of the company in 1852 were leased to Mr. Croll; is that so?—That is so.

2968. The lease expired in 1861?—The end of 1861.

2969. When the company resumed the management of their works?—That is so.

2970. Since the termination of the lease, have the company paid their maximum dividend of 10 per cent.?—They have paid the maximum dividend of 10 per cent., and a large amount to pay back dividends.

2971. The difference between eight per cent. and 10 per cent. during the six years of Mr. Croll's lease?—That is what they claim a right to pay.

2972. Is that what they are doing?—That is what they are doing; nine per cent. had been paid off before the declaration of the last half year's account, when a further one per cent. to be paid off, which would make 10 per cent. out of the 12, to which they claim the right to make up the dividends, so as to make the dividends which were paid during Mr. Croll's lease equal to the 10 per cent. allowed by the Act of Parliament.

2973. Did the company also claim the right to create a reserve fund?—Yes; at the time of our interview, nine per cent. out of the 12 (two per cent. for six years) had been paid, and since that a further dividend of one per cent. has been declared.

2974. Will that make up the whole?—No; two per cent. more will be due.

2975. Ten per cent. has been paid off, and two per cent. is considered to be remaining due?—Just so.

2976. Do you dispute the legality of that arrangement?—I was appointed to

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represent and to speak on behalf of the deputation, which had an interview with the directors; we claimed a reduction on several grounds, first of all, that the company, the shareholders, having voluntarily denuded themselves, and rendered it impossible for them to obtain more than the eight per cent. during the period for which their works were leased to Mr. Croll, and that having gone on for 10 years, they had no right to charge the consumers of the present decade with the deficiency of dividends, which had occurred through their own voluntary arrangement. That was the first point upon which we required a reduction in the price of the gas supplied to the consumers; the second was, that the South Metropolitan Company, whose district adjoins the Surrey Consumers' Company, were supplying at 3*s.* 4*d.* per thousand feet, and in some places a part of the same street was supplied by the one company, and another part supplied by the other.

2977. *Chairman.*] You have not stated the price charged by the Surrey Consumers' Gas Company.—4 *s.* 6 *d.*

2978. At the maximum?—Yes; it has never been reduced.

2979. Not up to this time?—Never; an announcement has been made, which I can only speak of as having seen it in the public prints since this inquiry has been going on, during the month of April; that, after Midsummer, the price is to be reduced to 4*s.* During that interview that we had with the directors of the Company, they told us that they could not entertain any application for a reduction of price until the full 12 per cent. had been made up, which would probably take two years from that time.

2980. Mr. *Staniland.*] Was it not originally less than 4 *s.* 6 *d.* when the company was first established?—I cannot say, from my own knowledge; during the time I have had anything to do with it the price has been always 4 *s.* 6 *d.* per thousand. The object of our application was to obtain a reduction to 4 *s.*, which is the price, I believe, charged by the Phœnix, which is another adjoining company.

2981. Mr. *Hoggins.*] In October last, did you attend as one of the deputation already mentioned at a conference with the directors?—That is the conference of which I have been speaking, and of which I have a printed report.

2982. Mr. Nicholson, a director of the company, spoke for the directors, did he not?—He did, mainly; the conference generally took place between Mr. Nicholson and myself.

2983. Did he state that another reason for keeping up the price of gas was the high amount at which the company's works were rated by the authorities of the parish of Rotherhithe?—It was stated by Mr. Nicholson, or by one of the directors, that a very large increase had been made in the assessment of their property by the parochial authorities; Rotherhithe mainly, and Bermondsey also; and we were told that we must not at all expect a reduction in the price of gas supplied to the consumer, unless some understanding was come to as to the assessment of the company's property by the parochial authorities.

2984. Did the company also claim to charge, and did they charge, the revenue with the loss by defalcations of some of their own servants?—That was another objection that we made; we said that the shareholders ought to suffer the loss that might arise through defalcations which we presumed were the consequence of negligent management, and that the customers should not be made to suffer through the loss by defalcations of persons employed by the directors.

2985. Did they refuse to make any reduction in the price of gas on that account?—They refused generally to make any reduction at all.

2986. Did they further intimate that no reduction would take place for at least two years?—Just so.

2987. Since that, however, and also since the subject of gas-lighting has been before Parliament, have the company expressed their intention of reducing the price from 4*s.* 6*d.* to 4*s.*?—I only know what I have seen in the public prints.

2988. Have you heard it from the directors?—No, I have had no communication with the directors on the subject.

2989. Were you not present at the meeting on the 12th April last?—No; our interview took place, I think, in October.

2990. How much does the Phœnix charge?—I believe 4*s.*

2991. Have

2991. Have they reduced or intimated an intention to make a reduction?—I cannot answer that question positively.

2992. *Chairman.*] What is the price of your public lamps?—Before the passing of the Act of 1860, the company supplied under contract at 4 *l.* per lamp; about 1860, or perhaps rather before that, their contract expired; several complaints had been made as to the way in which the lamps were lighted and attended to by the company, and the district Board wished to light and manage the lamps themselves; they applied to the company for an alternative price, they lighting the lamps, or the Board lighting the lamps; the company would consent to the lamps being under the care of the Board, but they said they would charge precisely the same as they did before, when they attended to the lamps.

2993. They would not make any allowance for labour, or ladders, and so on?—No; they intimated that if they continued to light the lamps, the price per lamp would be 4 *l.* 15*s.*

2994. What did you pay?—The Board undertook the lighting, and paid to the company 4*l.* per lamp as before; it was admitted that 15*s.* per lamp is a fair charge for the expense of lighting and looking after the lamps.

2995. They did not alter the price?—They did not alter the price, but the care of the lamps was then attended to by the district Board; since then the price has been again increased, and we pay 4*l.* 5*s.* per lamp, lighting the lamps ourselves, which we take to be equivalent to 5*l.* per lamp, or 25 per cent. above the price before 1860.

2996. We understand you to say that the price per lamp is increased by 5 *s.*, and that the expenses of lighting are thrown upon the district board?—Yes; it brings it up to 5 *l.* per lamp.

2997. As against 4 *l.*?—Yes.

2998. Mr. *Paull.*] When the Right Honourable Chairman says, "thrown upon the Board," was it not voluntarily assumed by the Board?—No; the question arose, which could do it the best and the most satisfactorily to the public. It was admitted that the cost of looking after the lamps, lighting, and so on, is fairly represented by 15 *s.* per lamp per annum.

2999. The result of it is, that the ratepayers have been charged 15 *s.* per annum more than when the company managed the lamps?—They have recently been charged during the last few years 20 *s.* more.

3000. That is by the operation of the Board, not by the conduct of the company?—It was by the conduct of the company, because if the company had lit the lamps they would have charged an extra 15 *s.*

3001. But you said that prior to the Board assuming the management of these lamps the company charged 4 *l.*?—Their contract expired, and they refused to renew the contract except on those increased terms.

Cross-examined by Mr. *Burke.*

3002. If I understand you, the company were quite willing to undertake the lamps themselves, the lighting and extinguishing the lamps themselves, at the same charge?—No, certainly not; the company refused to renew the contract except at an increased price.

3003. They themselves were willing at that price to undertake the lighting of the lamps?—Yes.

3004. You have voluntarily taken upon yourselves the charge of lighting the lamps?—Yes.

3005. Did not the company tell you that their reason was this, that if they lighted and extinguished the lamps themselves, they then secured the exact performance of the contract, but if they gave the lighting and extinguishing to your servants they would light the lamps when they liked, and put them out when they liked, and would therefore cause a great increase in the consumption of gas beyond the quantity contracted for?—In the contract it was carefully provided as to what time the lamps should be lit and extinguished; we complained of the company that they did not perform their contract.

3006. Is there a contract?—There is no contract now; I am speaking of the contract when it existed.

3007. Are not the facts these; that the company said, "We will, if you like, undertake all that duty, and then we shall secure that there is the consumption

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of gas that we contract to give you; on the other hand, if you choose to take that control out of our hands and put it in the hands of your officers, over whom we have no control, then we can make no reduction, because we know we shall be losers"?—No, that is not so.

3008. What did they say?—They said, "We will continue to light as we have done before, but we will not continue at the old charge; if we light, the charge will be 4 *l.* 15 *s.* per annum."

3009. That was because they gave an increased illuminating power, was it not?—I am not aware of it.

3010. Do you not know that before 1860, by their Act of Parliament they were bound to give an illuminating power equal to 12 wax candles, and that in 1860 Parliament required them to give a light equal to 12 sperm candles; are you aware of that?—I cannot say of my own knowledge.

3011. Was it not on that ground that they said, "If we are obliged to give gas of a higher power, we are justified in charging something more for it"?—I do not know that any ground was stated.

3012. Did they not also offer to light by meter, so that you might have an exact measurement of the gas?—There has been an offer of that kind, but I think that was subsequently.

3013. So far as the company is concerned, it is true that they increased the price in consequence of the increased illuminating power; did they tell you that if you liked to increase the gas, you should have it by meter?—That is so.

3014. Probably you know that in the Metropolis Gas Act there is this clause, that if any difference arise between the local authority and the gas company with reference to any alteration in the test, or the rate to be charged for gas supplied, or the lighting of any public lamps, the difference shall be referred to or determined by arbitration, in the manner prescribed by the Companies Clauses Consolidation Act; having that protection, have you ever referred the question to arbitration?—No.

3015. You think it better to come here and complain?—We had no alternative; we were obliged to light the public lamps; we could get the gas from no other source, and we had to submit to their terms.

3016. If you are ill-used, and if the company is acting towards you in an improper manner, there is by the general law a protection given to the vestry, is there not?—I do not know myself, I am not a lawyer.

3017. At the same time that you complained of that, you largely increased your local rates upon the gas company, did you not?—We did not in our particular parish.

3018. But in other parishes they did?—Here was a very large additional capital; that was one of the matters that was complained of that since, the Act of 1860, an Act was obtained by the Surrey Consumers' Gas Company, authorizing them to extend their capital very largely.

3019. *Chairman.*] We cannot go into that; I suppose if the parish overcharged the gas company for their works, they had the same power of appeal that the parish had against the company, for overcharging for the lamps?—That is exactly the ground we took.

3020. Mr. *Burke.*] They gave notice of appeal?—I am not associated with the parochial authorities of Rotherhithe or Bermondsey; I can only speak for my own district, St. Olave's, where I believe there has been no increase.

3021. Do you know that in the adjoining parishes the company have not only had to give additional illuminating power, but have been subject to a considerable increase in the parochial rates?—Not for the same works which they had before; but, having extended their works, and added greatly to the value of their premises, the rates are necessarily increased; we hold that great injustice was done to us, because we appeared before the directors not as parochial authorities, but as private consumers.

3022. Do you represent here that the company have in any respect transgressed their Act of Parliament?—We think they have, for this reason, that, voluntarily denuding themselves of the profits of their concern and restricting it to eight per cent. for 10 years, they have no right now, under the Act of Parliament, to make up those dividends in the same way as they could have done supposing the works had only produced eight per cent.

3023. That is a legal question?—Precisely; I say we think so.

3024. And, thinking so, the ordinary legal tribunals were open to you to test that

that matter; if the company violate the law, legal tribunals are the proper ones for settling that question?—So far as I am myself concerned I am not sufficiently up in the law to know whether my opinion is correct or not.

3025. They let their works to pay eight per cent.?—They did.

3026. To Mr. Croll?—Yes.

3027. Was he not a gentleman of very great experience in gas matters at that time?—No doubt he was.

3028. A gentleman, I believe, who was the founder of the Central Consumers' Company, in the City of London?—He might have been.

3029. Was any objection taken at that time by any parochial authorities, or others, to that letting at eight per cent.?—I was not in office at that time; I do not think that the public authorities had the slighest room to interfere in such a matter; it was a private arrangement.

3030. Do you not also know that under the Gas Clauses Act that the company are bound to reduce this charge after they have paid 10 per cent.?—Precisely; and that is the ground on which we applied, because since the expiration of Mr. Croll's lease the average dividend has not been less than $12\frac{1}{2}$ per cent.

3031. Do you not also know that by the Gas Act under which the company was acting when they let the works to Mr. Croll they had power, at any time, to recoup themselves if they paid less than 10 per cent.?—I did not know that.

3032. Do you know that in 1860 the public got this advantage over the gas companies that, whereas, theretofore, they could recoup themselves for any year in which they had a less dividend than 10 per cent., by that Act the time was limited to six years?—That is so.

3033. Was it shown to you by the gentleman standing behind me, to whom you referred, that the company, from the outset, had not paid more than about six per cent.?—I do not recollect the figures; I have the report here, which will speak more accurately than my memory.

3034. It was a consumers' company?—Yes.

3035. The Surrey Gas Consumers' Company?—Originally it was so intended.

3036. The company was formed by gentlemen who were themselves consumers of gas, and were to make gas for their own consumption in the cheapest manner?—It was originally intended to be so.

3037. *Chairman.*] With reference to that question, did the Surrey Consumers' Company propose to give gas to the district at cost price, or did they propose to form an ordinary commercial company involving the payment of dividends?—Just the same as any other company.

3038. Then the district taking their gas had no advantage over any other district?—Not the slightest.

3039. Mr. *Staniland.*] Was that the case originally when the company was founded?—I believe so; to the best of my belief, it was so; but afterwards, in a very short time, it ceased to have anything to do with consumers beyond the mere name; it is an ordinary joint-stock company.

3040. A commercial company in the ordinary fashion?—Yes.

Re-examined by Mr. *Hoggins.*

3041. You were asked by my friend if you did not know that the company were bound to give a higher illuminating power after 1860; let me ask you whether, after 1860, the illuminating power was increased or not?—I do not think there was any improvement whatever; I know, as a member of the Board of Works, that we have been inundated with complaints of want of illuminating power and want of purity.

3042. *Chairman.*] I understand that you have no chemical knowledge sufficient to ascertain the fact?—I do not pretend to have it.

3043. You do not pretend to give an accurate answer?—I do not.

3044. Mr. *Hoggins.*] Did you ever hear in your district that there had been any increase of gas-lighting power?—No, certainly not; the complaints have been all the other way.

3045. Mr. *Lusk.*] This lease to Mr. Croll was for 10 years, was it not?—Yes.

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3046. I believe he is rather a clever gas engineer?—Public report says so.

3047. And he paid the company, the shareholders, eight per cent.?—Yes; the directors complained that the plant was so exhausted when it was handed over to them, that they had to make up, at the expense of the consumers, the deficiency arising from the plant being so exhausted during the latter part of Mr. Croll's lease.

3048. I suppose you would come to the conclusion that Mr. Croll would get a considerable per-centage out of his lease?—We believed that the profits of the undertaking, including the dividend paid to the shareholders and Mr. Croll's profit, always amounted to more than 10 per cent.

3049. Mr. Croll would receive a good dividend himself for his work, over and above the eight per cent?—We believe that.

3050. Then you believe that if you have to pay that, it will be paying twice over?—That is exactly the ground we take.

3051. That the public would have to pay Mr. Croll, and then would have to pay the company?—We say we have already paid, and that we are entitled, under the provisions of the Act now in force, to a reduction, because the 10 per cent. has really been paid; and we reason in this way, that if they had a right to lease their works at eight per cent. then, they have a right to lease their works at eight per cent. now, and, consequently, the provision of the Act of Parliament, as to compulsory reduction, is utterly and absolutely useless.

3052. Mr. Croll would have a good profit on what he did?—We believe he made a very large profit.

3053. Then the company got eight per cent., so that you would be paying a second time?—Precisely; we say that we have really paid.

3054. *Chairman.*] What you really mean to convey to the Committee is this, that you, and other consumers, had, in fact, to pay more than 10 per cent., when you include the profit made by the contractor with the parish?—Precisely; that is our view.

3055. Mr. *Lusk.*] I suppose you charged more rates, because they added a great deal to their works; if they increased their capital, they would increase their works?—Yes.

3056. The parish accordingly charged more rates?—Just the same as any other manufactory.

Mr. *Burke* said, he was informed that the whole of the evidence on that subject was fallacious, there having been no lease to Mr. Croll securing eight per cent., but simply an agreement, by which Mr. Croll was to deliver gas at a certain price to the company.

3057. *Chairman.*] Do you know what the terms of the contract were?—Of course, I cannot say I have seen the lease, or examined the clauses of it, or the covenants which it contains; but, in the entire discussion at the conference which took place between myself and Mr. Nicholson, that was our basis; not a single word was said denying the fact of Mr. Croll's lease.

3058. You assumed that fact in your conference, and it was not denied by the other party?—Precisely so.

3059. That is the simple fact?—Yes.

3060. Do you mean to state to the Committee that Mr. Croll had a profit after paying eight per cent. to the company?—We have always understood that he had a large profit.

3061. Do you know it for a fact?—No.

3062. Would he have been paid for his labour and undertaking, in any other way than by a profit?—None whatever.

3063. There were no other means of paying him?—None whatever.

3064. You do not suppose he undertook the work gratuitously?—Certainly not.

3065. You assumed that profits did exist, of which you have no knowledge as to the amount?—Precisely.

3066. Mr. *Hartley.*] Might not Mr. Croll by his skill, be able to manufacture cheaper than the company?—Very probably he might.

3067. Then would not that be his profit?—The difference between what he received and what he paid would be his profit under any circumstances.

3068. Mr. *Morrison.*] You did not take any legal proceedings with regard to this question, as to whether it was in accordance with the Act?—No, it was

in

in last October that the interview took place; the question was referred to the legal advisers of the three parishes, to advise whether we had ground for taking any action, to put in force the compulsory powers of the Act, so far as a reduction of the price was concerned; soon after that, this agitation began, and nothing further has been actually done.

3069. You did not take counsel's opinion?—We did not.

3070. And are you aware that the 46th section of the Gas Act of 1860, by which the Secretary of State is empowered to take legal proceedings?——We were not quite clear as to our legal rights, in consequence of this singular arrangement, as between Mr. Croll and the company, whether they had the right to make up their dividend, having voluntarily given up part of it; that was their position; our position was that they had not that right, but we have not taken steps to test that.

3071. Mr. *Paull.*] Did not the legal adviser give you any opinion about it?—One of the vestry clerks advised that the contention on the part of the company was right.

3072. Was he a solicitor?—Yes, he considered that they had a right to make up the back dividends, notwithstanding that they had executed what we said was a voluntary lease on their part.

3073. But lease or no lease, in that solicitor's opinion the company was in the right?—That the company had a right to make up the dividend.

3074. Did the other gentlemen concur?—The other two gentlemen have not given us their reply; one of them has applied to the company for certain information, so that he might be able to give a more careful reply to the question, which information was refused, consequently he has not replied at all.

3075. *Chairman.*] Have you seen the Act of Parliament which regulates the gas companies, the Act of 1860?—I am tolerably familiar with it.

3076. Then you probably have referred to the clause by which the companies are allowed to put by a part of their earnings proportionate to their capital as a reserved fund for contingencies; are you aware that this company has ever done so?—I know that the directors claimed the right to put by a reserved fund equal to the whole price of their shares, because they said that some scientific discovery might by and bye supersede the use of gas altogether, and then they had a right to be paid at par.

3077. Do you know what the capital of the company is?—No.

3078. Whatever the amount is, are you not aware that it is limited to one-tenth part?—I am not aware of it.

3079. Your evidence is chiefly to the point that you dispute their right to make up a dividend over and above eight per cent. to 10 per cent. for back reckoning; that is your complaint?—Yes; in consequence of their having voluntarily given up the surplus dividend during the time of their arrangement with Mr. Croll.

3080. You further state that one of your legal advisers has advised you that the company are right, and that the other two have not given any opinion?—I said so.

3081. You are not fortified by any legal opinion; that is only your own opinion?—That is so.

3082. Mr. *Paull.*] How long ago is it since these gentlemen were consulted?—It was in October that the interview took place.

3083. I mean the solicitors?—It was some time after that meeting: I will not say whether it was before or after the beginning of the present year; it was four or five months ago.

3084. Are the vestry waiting for the opinion of those gentlemen before they take any legal proceedings?—That is the actual position of it; it was referred to the legal officers of the board in one case, and of the vestry in the other, to give their legal opinion, which has not yet been received.

3085. Sir *William Gallwey.*] Mr. Croll must have received some large remuneration from the company, must he not, if he had an opportunity of making profit by his contract; and he would not have worked for nothing?—I do not at all suppose he would.

3086. Do you consider his profit was much larger than his remuneration ought to have been?—I cannot answer that question.

3087. I thought you considered he was receiving too much?—We considered that the company, having entered into an arrangement which prevented them

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under any circumstances paying to their shareholders more than eight per cent. during the continuance of that arrangement, they had no right afterwards to charge the consumers with the difference.

3088. Mr. *Staniland.*] Do you happen to know whether there was a lease or a mere working arrangement, and do you know whether it was one of the provisions of the arrangement that Mr. Croll was to undertake the wear and tear of the plant, and the cost of the management of the company?—I understood that he took all the expense upon himself.

3089. The wear and tear of the plant, and the cost of management?—I understood so.

3090. Did you ever see the arrangement?—No.

3091. I think you said in your evidence that the company alleged that there had been a large expenditure in consequence of the plant and works being defective when Mr. Croll left?—Being exhausted.

3092. Then the inference is that Mr. Croll did not keep them in proper order, and that they fell on the company?—At the expiration of the lease the company took them in their then condition.

3093. And had to lay out large sums in restoration and repairs, as you understood?—That was stated by the directors.

3094. Sir *William Gallwey.*] Can you state that there was a lease to Mr. Croll?—It is stated by one of the directors that there was none, and of course I would not contradict him.

3095. Are you prepared to say that there was?—No, I always understood that there was.

3096. You are not prepared to state that there was?—I would not say there was in opposition to the gentleman who says there was not, and can speak of his own knowledge; I would not contradict him.

3097. Mr. *Paull.*] Is it true that, of your own knowledge, you know nothing at all about the details of any arrangements that may at any time have existed between Mr. Croll and the company?—I know, as representing the public, that we were informed by the directors at that time that Mr. Croll's lease was in operation, and that at a given time, at the end of 1861, I think, Mr. Croll's lease had expired, and then the works would revert into the hands of the directors; that is what we have always been informed, and it has come to me as a member of the Board of Works.

3098. Mr. *Morrison.*] You have not had that in writing?—No.

3099. Did any letters pass between you and the directors on the subject?—I should think not.

3100. It was only a personal conversation?—There were frequent communications as regards contracts, and negociations for the renewal of the contracts.

Mr. *Zachary Mellor,* called in; and Examined by Mr. *Webster.*

Mr. *Z. Mellor.*

3101. You are Town Clerk of Rochdale?—I am.

3102. How, previously to 1845, was Rochdale supplied with gas?—By a private company.

3103. Was there only one company?—Only one company.

3104. About that time was there a movement made to get supplied by the Commissioners?—There was.

3105. And did the Commissioners obtain an Act for that purpose?—They did in 1844.

3106. Previous to 1845 the gas was supplied by the company, and in 1844 an Act was obtained?—An Act was obtained.

3107. Under the provisions of that Act, did the gas works of the company become transferred to the Commissioners?—Yes.

3108. At what cost?—I think the cost was 26,000 *l.*, with the Parliamentary expenses the amount was 27,700 *l.*

3109. After that, did the Commissioners continue the management of the works after the town became incorporated?—They did.

3110. When was the town incorporated?—In 1856.

3111. On the incorporation of the town, were the powers of the Commissioners, as to lighting, transferred to the Corporation?—All the powers of the Commissioners were transferred to the Corporation as soon as the deed could be prepared; all the powers and liabilities of the Commissioners were transferred to the Corporation, who took all the obligations of the company.

3112. And

3112. And they have carried on the gas works since 1856?—They have.

3113. I think you told us that the cost to the Commissioners was 27,700 *l.*?—About that in round numbers.

3114. Since that time, up to March 1865, what has been expended on the gas works?—Up to March 1865 about 70,685 *l.*; that is the capital account.

3115. That was the total, including the original cost and what had been expended afterwards?—Yes.

3116. That was the total outlay?—The total outlay.

3117. What was the mortgage debt remaining at that time?—We were obliged to borrow money in 1844, when the town purchased the works.

3118. In 1865 you say the total expenditure was 70,650 *l.*?—It was.

3119. What was the mortgage debt in March 1865?—53,349 *l.*

3120. How had the difference between the 70,650 *l.* and the 53,349 *l.* been discharged?—When, in 1853, the Commissioners went for another Act of Parliament to obtain increased borrowing powers, by that Act they were compelled to pay a fortieth part of the debt every year, and they have paid off borrowed money, 14,600 *l.*, up to March.

3121. Previous to that I think there had been a depreciation fund?—Yes, of about 9,000 *l.*, which makes 23,722 *l.* paid off in mortgages and depreciation fund, leaving about 51,690 *l.*; the total amount of borrowed money was 75,400 *l.*

3122. Does that 75,400 *l.* represent the actual money expended in the purchase of the company's works, and the extension of the works?—Yes, since the purchase.

3123. What is the present price of gas in Rochdale?—4 *s.* per thousand feet within the borough.

3124. And what is it outside?—5 *s.*

3125. I believe there is also some discount?—There is a discount allowed.

3126. Mr. *Hartley.*] What is the amount of the discount?—When the annual consumption is 5,000 and under 10,000 feet, there is a discount allowed of 1 *d.* per 1,000 feet; when the consumption is 10,000 and under 20,000 feet, 2 *d.*; 20,000 and under 100,000 feet, 3 *d.*; 100,000 and under 800,000 feet, 4 *d.*; 800,000 and above, 5 *d.*

3127. *Chairman.*] Which is the largest supply, that within the borough or that beyond it?—Within.

3128. You supply within the borough more gas at 4 *s.* than without at 5 *s.*?—Yes, many times over.

3129. The price is 5 *s.* beyond the borough?—That is the price to which we are limited by the Act, but we charge only 4 *s.* 6 *d.*

3130. And 4 *s.* within the borough?—Yes, subject to these discounts.

3131. Mr. *Webster.*] What has been the amount of the production of gas in different years in Rochdale?—The amount of gas sold to private consumers, 78,601,000 feet; the estimated amount consumed by street lamps, 7,206,000 feet; lost by leakage and condensation, 50,608,000 feet; total quantity produced, 101,417,000.

3132. What is it made from?—Cannel and coal.

3133. What is the price of the cannel?—I think we are now paying for cannel about 15 *s.* 6 *d.* per ton.

3134. And what for the other coal?—7 *s.*

3135. Do you know what quantity of each you have used?—We used 10,443 tons of cannel and coal for the year ending March 1865; we use one ton of coal to nine tons of cannel.

3136. What do you pay for the public lamps?—We paid 12,085 *l.* last year.

3137. To how many lamps?—700.

3138. That is under 2 *l.* a lamp?—Yes.

3139. Who lights them?—The Lighting Committee; the Corporation charges the Lighting Committee for the gas, and the Lighting Committee find their own men to light the lamps.

3140. The cost of lighting must be charged in addition?—It must.

3141. What is the cost of lighting?—The cost of lamp lighting is 291 *l.*

3142. That must be added to the 12,085 *l.*?—Yes.

3143. Making about 2 *l.* a lamp?—Yes.

3144. Lighting and all?—Yes.

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3145. What was the length of main in 1844, when they purchased the works?—About 17,669 yards.

3146. What is it now?—78,901 yards.

3147. Has there been a considerable amount of profit realised by the Corporation laid out in the streets?—Yes; laid out in widening and improving the streets.

3148. To what extent?—The whole of the profits.

3149. How much have they amounted to?—For the whole period, 36,661 *l.*

3150. *Chairman.*] During how many years?—Since we purchased in 1844.

3151. Mr. *Webster.*] And, during that period, has there been a considerable allowance for discount from the prices you gave?—The allowance is made for discount before we calculate our profits.

3152. I presume you are in favour of the lighting being in the hands of a public body?—I am not either for or against it; but, as a matter of opinion, I believe that, in the hands of a public body, it is more beneficial and advantageous to a town; I have no preference for one or the other.

Cross-examined by Mr. *Burke.*

3153. You have stated the charge for public lamps?—Yes.

3154. Including repairs and all?—Yes.

3155. Are they good lamps; do they give good light?—They do.

3156. Then we may assume that they are consuming five feet an hour?—That is about it. Professor Roscoe, of Owen's College, Manchester, inspects them three or four times a year, and the last year but one, the illuminating power was 20 candles.

3157. Mr. *Webster.*] I forgot to ask you what was your illuminating power?—It has been about 18·6 for the past three months.

3158. Is there any sulphur in the gas?—Very little.

3159. Mr. *Burke.*] You say that the cost of the public lamps is about 2 *l.* per lamp. Now, if they consume five feet per hour, how much per thousand feet do you charge to the public consumer?—The amount paid for public lamps is 1,285 *l.*

3160. Are there any meters?—No, there are not any meters.

3161. I am assuming that the lamps give a full light, how many hours do they burn?—We pay 3 *s.* 6 *d.* I think per thousand feet; they burn about three and three-quarter feet, or four feet per hour.

3162. What is the ordinary consumption of your lamps?—I can give you no more than I have stated, about four feet.

3163. Taking it at four feet, how many hours do they burn in the night?—That is very uncertain, it depends upon the state of the weather and the moon.

3164. You do not light the lamps on moonlight nights?—On moonlight nights and in the summer season when it is very light, they may not light the lamps at all.

3165. Can you give us the number of hours they burn, something like a general average, and how much the price is per thousand feet?—The price to the street lamps is 3 *s.* 6¼ *d.* per thousand feet.

3166. I think, unless you leave the place in darkness for a large portion of the year, 2 *l.* per lamp will only work out about 2 *s.* per thousand feet at the outside?—Three and three-quarter hours is the limit, but they are not very nice; I dare say they burn above four.

3167. Would you give an average of four?—I should say about four; I believe they burn more.

3168. *Chairman.*] You have no direct means of knowing the precise quantity of gas consumed by each individual lamp?—Nothing more than by the burners: the size of the burners and the number of hours. They know the number of hours the lamps are lighted, and the size of the burners generally.

3169. Mr. *Burke.*] If the amount paid per annum is 1,285 *l.* for 700 lamps, burning the amount of gas you have given, you will see that the price per thousand feet is immeasureably less than their charge to the private consumer. Outside the borough you are charging 4 *s.* 6 *d.*, are you not?—4 *s.* 6 *d.* per thousand feet.

3170. According to our calculation it comes to 2 *s.* 4 *d.* per thousand feet for

for your public lamps?—It can be very easily worked out. I have no doubt that it is correct here. I cannot speak positively as to the number of hours the lamps burn. The manager can tell you better than I can.

3171. It appears that they are charging within the corporate district a very low price to the ratepayers, and making the people outside the borough pay 4 *s.* 6 *d.* for gas, in order to cheapen the public lights?—There is nothing at all in that; you cannot make it so.

3172. Supposing you charged the same rate, 4 *s.* per 1,000 feet, for your public lamps, which you do to the private consumer within the borough, you would have a large margin of profit, would you not?—The price we charge for the street lamps is about 3 *s.* 6¾ *d.*, and the average, I daresay, when the discount is taken off, is about the same to the private consumer.

3173. Supposing the charge were the same for the public lamps as it is for the private consumer, I ask whether you would not get more money than you do now?—No, I do not know that we should; the price to the private consumer is 4 *s.*, but when you take the discount off, I cannot speak positively, but I think it might average 3 *s.* 8 *d.* or 3 *s.* 7 *d.*

3174. Do you not say that you consume 2,789 hours of gas by your public lamps?—Yes.

3175. And you adhere also to the price you gave; so that it is a matter of calculation?—Yes; I may have made some error as to the quantity burnt; I will not be positive as to the amount burnt, but I have no doubt in my own mind that these facts are correct; they have been prepared for the committees from time to time, and averages are made every year; the cost of the public lamps is 3 *s.* 6¾ *d.* per thousand.

3176. You say you charge 4 *s.* within the borough, subject to these small discounts, and 4 *s.* 6 *d.* out of the borough; how far do you carry your gas; what is the ultimate distance from your works, the greatest distance you travel?—I should say between two and three miles.

3177. Mr. *Paull.*] Does that refer to the private consumer or to the public lamps?—To the consumer, not to the lamps; the borough is a circle, with a radius of three-quarters of a mile.

3178. Within three-quarters of a mile you charge 4 *s.*, and beyond three-quarters of a mile you charge 4 *s.* 6 *d.*?—We do.

3179. Mr. *Burke.*] Are you not, therefore, charging more—you, the Corporation, with your coal at 7 *s.* a ton—than the London companies are charging at this moment?—I know nothing about the companies in London and what they charge.

3180. You cannot give me a case of a London company, although they travel many miles, making differential charges?—I cannot tell; I know nothing about the London companies.

3181. But you come here to draw a comparison?—It is utterly impossible to draw a comparison when you do not know anything about it.

3182. Are you the same Francis Z. Mellor, town clerk, who sent a return to Parliament last Session, in relation to the Rochdale Gas Works?—I am.

3183. Does it appear by that return that your profits of 1863 amounted to 4·6?—I have been giving you the calculations of 1865.

3184. I am asking you as to the profits of 1863?—The profits amounted to 960 *l.* in 1863.

3185. I find that the rate of profits upon your capital in 1863 is stated thus: The price of common coal is 9 *s.* 8 *d.*; cannel coal, 17 *s.* 4 *d.*; fixed capital, 68,417 *l.* 9 *s.* 10 *d.*; and the profits 4·6?—Yes, that is it; the profits in that year amounted to 968 *l.* 10 *s.* 8 *d.*

3186. Mr. *Hartley.*] Is that 4½ per cent., after allowing 5 per cent. capital?—Certainly.

3187. What interest do you pay upon capital?—We pay upon borrowed money 4 per cent. in some cases, in some cases 3½, and in some 5 per cent.

3188. If you were a commercial company you would be making about nine per cent. upon your capital?—If you add the fortieth part that we pay off, that would be reckoned as part of the profits.

3189. Mr. *Burke.*] You said you bought up the existing company; was that by consent of the company?—It was.

3190. You paid them the price that they were willing to take?—Yes; the price was agreed upon.

Re-examined by Mr. *Webster*.

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3191. What was the price?—About 27,700 *l.*, including the cost of obtaining the Act.

3192. Do you know what they were paying?—They were paying about 10 per cent., so we were given to understand.

3193. You told my friend that your illuminating power was 18 candles?—Yes; it was 20.

3194. Is there a regular test applied for purity?—Yes, Professor Roscoe tests regularly.

3195. You do not know of your own knowledge what he does?—No; his last report was given about a month ago, when he stated that the illuminating power was 18·5 or 18·6.

3196. Mr. *Paull.*] I understood you to say that the coal you use is 7 *s.* per ton?—At present, but if we had to deal with it now, it would be 10 *s.*

3197. When these accounts were made the coal you used was 7 *s.* a ton?—Yes.

3198. Do you know the price they charge per thousand?—No.

3199. If you were told that the coal they use is 16 *s.* per 1,000, and that the price per 1,000 feet of gas is 4 *s.*, and if, as you have stated, your coal is 7 *s.* per ton, and you charge 4 *s.* per 1,000 feet, out of whose management do the public get the greatest advantage; the Corporation's management or that of the City companies, considering the price of the raw material?—Well, that is a question that wants consideration; it depends on circumstances; we use a great deal of cannel, nine parts of cannel to one of coal; I do not know whether they get the coal in London from Newcastle or from where; they would not use cannel; I must know what proportion of coal they use: they may use a less supply of cannel than we do.

3200. What is the cost of the mixed material which you use?—We use nine parts of cannel at 15 *s.* 6 *d.*, and one part coal at 7 *s.*

3201. What is the cost of the mixed material?—It would be nine-tenths of 15 *s.* 6 *d.*, and one-tenth of 7 *s.*

3202. *Chairman.*] That would be about 14 *s.* 6 *d.*?—Yes.

3203. What does your municipality sell the coke for?—We sell the coke at about 4 *d.* per cwt.; we have recently raised it from 3 *d.* to 4 *d.*

3204. Have you any sale for tar or other matters?—Yes, we got in the year 1865 for tar and ammoniacal liquors 849 *l.*

3205. Does that include the lime used?—For coke we got 765 *l.*, for refuse lime 63 *l.*, and sundries 85 *l.*

3206. Sir *William Gallwey.*] Have you any other company in Rochdale besides your own from which the public may receive gas?—There never was more than one company.

3207. Then your supply may be called a monopoly?—Any person can make gas as well as ourselves.

3208. Practically, that is impossible?—No, we have large mill-owners who make their own gas.

3209. I suppose that is exceptional?—It must be large mill-owners who would do that.

3210. Have you many complaints from consumers of the quality of your gas?—No, I think not; I think the gas is about as high as is burnt anywhere; I do not say that there may not have been some single consumer complaining, but the complaint has not arisen from our gas; it has been something found out elsewhere.

3211. If they did complain, what remedy would they have?—They have no remedy but to make their own gas.

3212. Mr. *Lusk.*] The works are your own property; they belong to the town?—Yes.

3213. And, of course, if a man has any appeal to make he makes it to himself—to his magistrates and his own people?—To the Gas Committee and the Corporation, who have the management of it.

3214. *Chairman.*] You say you have no complaints, or very few?—We have no complaints as to the quality of the gas.

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3215. Mr. *Lusk.*] You say that the light is equal to 18 candles?—Yes, that is the last report, made a month ago.

3216. Mr. *Webster.*] There is an inspection every three months, I believe?—Yes, by Professor Roscoe.

3217. Sir *William Gallwey.*] Is that made at certain hours?—No, it is not made at certain hours; our manager does not know when Mr. Roscoe comes to the works; he comes upon him suddenly at his own time.

3218. I suppose you pay him?—Yes; but his instructions are not to give notice when he comes.

3219. You pay him?—Certainly; but for our own sake we take care that the manager does not know anything about when he comes; he drops in when he pleases.

3220. What did you pay for the shares of the company; the market value at the time?—I suppose about the market price; they were then charging 7 *s.* per 1,000 feet for gas.

3221. Did you buy the shares at the then market value?—About the market price; we thought we gave more.

3222. *Chairman.*] Were you in office then?—I was not, but I was with the solicitor at that time.

3223. Sir *William Gallwey.*] Do the Corporation supply water?—No; they are in Parliament now to obtain water works.

3224. Mr. *Burke.*] Do you yourself know the proportion of cannel used in the manufacture of gas?—I cannot say that I got hold of the spade, and threw it into the retort and mixed it, but I know it from our manager.

3225. Is that your balance-sheet of last year (*handing same to Witness*)?—Yes.

3226. Mr. *Webster.*] Probably you know the total quantity of cannel, and the total quantity of other coal?—Certainly; we know what we consume every year.

3227. And are they in the proportions you have given, nine of cannel and one of coal?—Certainly; I may say we get no profits outside the borough.

3228. Mr. *Burke.*] Does not 4 *s.* 6 *d.* pay you?—We have to take the mains a long way, where there are no houses.

Mr. *Robert Paget*, called in; and Examined by Mr. *Sargood.*

Mr. *Robert Paget.*

3229. You are vestry clerk of St. James's, Clerkenwell?—I am.

3230. Are you supplied with your public lights by the Chartered Company and also by the Imperial?—Yes.

3231. Previously to Lady-day 1860 did the Chartered Company supply your public lights at 3 *l.* 17 *s.* 6 *d.* per lamp?—Yes.

3232. And did the Imperial, prior to December 1860, supply you at 4 *l.* 10 *s.* per lamp?—Yes.

3233. Did the Chartered Company give you notice to raise their price to 5 *l.*?—Yes.

3234. *Chairman*]. In what year?—In 1860.

3235. Mr. *Sargood.*] Did the Imperial Company in December 1860 give you notice to raise their price from 4 *l.* 10 *s.* to 5 *l.* 10 *s.*?—Yes.

3236. Could you attribute that to any particular reason other than that the Act of 1860 gave them power to do it?—I attribute that to the fact that in the previous year the vestry increased the assessment on their works.

3237. Which company was that?—Both.

3238. You think that might have had some influence upon them?—Yes, I have reason to believe that that was the reason.

3239. Were those assessments the subject of litigation in either case?—Yes, in both cases.

3240. How were they ultimately settled?—The Imperial was settled by agreement at 800 *l.*

3241. What had it previously been?—170 *l.*

3242. And the Chartered?—The Chartered was settled by the Court at 1,022 *l.*

3243. Having previously been what?—150 *l.*

3244. What difference in the annual rate did it make to the Chartered Company; the annual sum they had to pay?—I have not gone into the difference; these

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these figures are the assessments; of course, the rate upon the assessment, the amount they would have to pay, would depend upon what the rate was.

3245. Do you remember what the amount of the rate was?—It averages, taking the poor rates and local rates altogether about 4 *s.* 8 *d.*

3246. Then it would be 4 *s.* 8 *d.* upon the increased assessment?—Yes.

3247. I need not ask you whether the difference in the price of the lamps was not a great deal more than that?—In the case of the Imperial the difference amounted to 13 *l.* a year; I should state that the Imperial ultimately reduced their charge to 5 *l.* per lamp, from the threatened 5 *l.* 10 *s.*, and the vestry reduced the assessment from what they put it up to, to 800 *l.*

3248. So that that only raised the lamps 10 *s.*?—Only 10 *s.* per lamp.

3249. How many lamps have you?—There are 320 of the Imperial.

3250. And how many supplied by the other company, the Chartered?—Three hundred and three lamps.

3251. They raised the price 1 *l.* 2 *s.* 6 *d.*?—Yes, that would be above 340 *l.*

3252. Mr. *Hartley.*] How many hours do the lamps burn?—From sunset to sunrise; I forget the exact number of hours.

3253. All the year round?—Yes.

Cross-examined by Mr. *Burke.*

3254. I think the increase by the Imperial was before 1860, was it not?—No.

3255. Was it not in 1859 that you increased the assessment?—Yes.

3256. You state that the Imperial assessment was under 200 *l*?—Yes.

3257. And did you raise it at once from under 200 *l.* to 3,294 *l*?—That was so.

3258. Upon that the Imperial Company told you, "If you assess us to that large amount, we must inevitably charge you more for our gas"?—They simply gave us notice, that after a certain date they should put the lamps up to 5 *l.* 10 *s.*

3259. And, instead of charging them 3,294 *l.* you seem to have admitted that that was an excessive amount, and reduced it to 800 *l.*?—Yes.

3260. And they took off 10 *s.* a lamp, at once?—Yes.

3261. What is the rate; nearly 5 *s.* in the pound, is it not?—It is now 4 *s.* 8 *d.*

3262. So that, in point of fact, they would pay you 200 *l.* more, whereas upon 320 lamps they would only get 160 *l.* additional profit?—Yes.

3263. So that by that arrangement the parish would be gainers?—No, the parish were losers; the increased charge on their lamps would come to about 160 *l.* a year, and the increase of rating would come to about 147 *l.*, leaving 13 *l.* in their favour.

3264. The increase of rating must be more than 147 *l.* at 4 *s.* 8 *d.*?—The increase would only be on the difference in the assessment, not on the 800 *l.*

3265. Then practically, it comes to about the same figure?—Yes,

3266. I think you extracted from the Imperial Company a rate for one year, at all events, upon 3,294 *l.*?—No, there was some considerable litigation and negotiation about it; in fact, the Imperial Company appealed, but the appeal was dismissed in consequence of their disputing the principle upon which they were to be assessed.

3267. Did you get an assessment upon that sum for one year?—I think not.

3268. Do you say you did not?—To the best of my recollection we did not take the rates upon the larger sum.

3269. You never got that?—I think not, I will not answer the question positively.

3270. Practically, with your increased rate and our increased price, you stand upon about the same footing?—About the same.

3271. By the Act of 1860, you got two candles illuminating power more than you had before?—I am not aware of that.

3272. You know that a sperm candle was adopted instead of a wax candle as a test?—I know that.

3273. It was a sperm candle by the Act of 1860?—I know that, but I did not know what the previous one was.

3274. Have you worked out what you paid per 1,000 feet for your lamps?—I have not.

3275. Will

3275. Will you undertake to say that it is more than 3 *s.* 6 *d.* per 1,000 feet that you pay?—I have not gone into the question.

3276. It is very material to ascertain, in considering whether you pay too much; will you say that at 5 *l.* per lamp, looking at the services performed, your parish pays more than 3 *s.* 6 *d.*?—I am not prepared to answer that question.

3277. Have you expressed a dissatisfaction with the price as being an unfair price?—My board thinks that it is not a fair price.

3278. Being a legal gentleman, you are aware that under the Metropolis Act they can go to arbitration?—I am quite aware of that.

3279. You have never availed yourselves of that?—No.

3280. Is it not the fact that the Chartered Company burn more hours than they did at the previous price?—I am not aware of that.

3281. Will you undertake to say that they do not?—I would not say one way or other; I believe that the recognized time is from sunset to sunrise.

3282. *Chairman.*] According to the period of the year, of course?—Yes.

3283. Mr. *Burke.*] Have the Chartered Company reduced their price to you?—No.

3284. What is the present price charged?—5 *l.*

3285. You say that the Chartered Company have not reduced their price?—No.

3286. The Imperial charged you 5 *l.* per lamp; have they reduced their price?—Yes; last July.

3287. What is their charge now?—4 *l.* 14 *s.*

3288. Before 1860, they charged you 4 *l.* 10 *s.*?—Yes.

3289. Then you got an increased rating, and an increased illuminating power; now they charge 4 *l.* 14 *s.*?—Yes; 4 *l.* 14 *s.*

3290. *Chairman.*] You have been asked several questions as to the mode in which you have assessed these works; had you a re-valuation in your parish when you raised the assessment of the Imperial Company from 170 *l.* to upwards of 3,000 *l.*?—No, not for the parish altogether; only for the works of public companies.

3291. You re-assessed all the public companies?—All the public companies.

3292. Upon what principle did you proceed to rate them?—The fundamental principle was this: it was what a tenant would give for them if they were going to be let; just the same as a house.

3293. What you have to rate in your parish would be only the mains and services; none of the works are situated in the parish?—No.

3294. Simply the mains?—Yes.

3295. You rate upon the profits received within the boundaries of the parish?—Yes.

3296. Upon what principle did you proceed to enable you to make such an enormous advance, from 170 *l.* to upwards of 3,000 *l.*?—A professional man was engaged for that purpose; I did not go into that myself, and I am hardly prepared to answer that question.

3297. The reduction to 800 *l.* seems equally striking; upon what principle did you afterwards abandon the advanced amount?—It was abandoned for this reason, that we were not in a position then, for the want of the necessary information from the companies, to maintain the assessment that the engineer had put them up to; but the vestry whenever they felt disposed could revive the question at a future period when they obtained further information.

3298. Then your present assessment on 800 *l.* is merely a provisional temporary arrangement?—Quite so.

3299. The whole question can be re-opened?—Quite so, and it was stated at the time that the question would be re-opened.

3300. How many years before had the rating stood at 170*l.*?—I cannot say; I only became connected with the parish 10 years ago, and can only speak from that date; it has remained at that amount from that date.

3301. As extensions take place by building, of course the works of gas companies extend?—It so happens that Clerkenwell is so built upon that there is no possibility of extension.

3302. You can only value what previously existed; you have no new works?—The works have increased in value, or larger mains have been laid down from time to time through the parish.

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3303. They have been renewed?—Yes.

3304. To carry them into other parishes?—Yes, and to supply our own as well.

3305. You would not be entitled to assess property carried beyond your parish?—No.

3306. Only that in use within it?—Yes.

3307. The profitable occupation within it?—Yes.

3308. That would be the principle?—Yes.

3309. Did you proceed on the same principle with the other company, the Chartered?—Yes.

3310. Is that a temporary compromise, or a final settlement for a term?—The assessment is only for one occupation year. The question is open to be revived at any time, but it was settled on that occasion for the time being, but I must say it was not exactly a satisfactory settlement to the vestry at the time.

3311. Are you in litigation with either company?—Not at the present time.

3312. You settled these matters by compromise at the time?—Yes, and they so remain at the present time.

3313. Mr. Alderman *Lusk.*] Did you appoint an examiner?—No.

3314. Do you know why the vestry will not appoint an examiner according to the Act?—I can scarcely say what the reason would be, speaking generally, I think the vestry felt they could scarcely benefit much by it.

3315. Assessing property of that sort, you employ a man who is competent to do so?—We employ one who makes it his profession.

3316. Do you think that is the customary way in which such property is valued in London?—With regard to the assessment of large works like public companies that is the case, but with regard to the assessment of the ordinary property of the parish, we have what we call an assessment appeal committee, who do it.

3317. But I believe for large works it is customary to employ a professional man?—I believe it is.

3318. That is what you do?—That is what we do, and if we were to go into the question again, I daresay we should employ a professional man for the purpose.

3319. How much do you at present pay per lamp?—5 *l.* to the Chartered, and 4 *l.* 14 *s.* to the Imperial since Midsummer last.

3320. Mr. *Paull.*] Was the 3,294 *l.* the amount fixed by the assessor?—Yes.

3321. Then you reduced it to 800 *l.* without consulting him, I presume?—Yes.

3322. That was matter of arrangement?—That was matter of arrangement, I believe the vestry had every disposition to do as little in law as it could.

Mr. *William Francis Jebb*, called in; and Examined by Mr. *Hoggins.*

Mr. *W. F. Jebb.*

3323. I BELIEVE you are clerk to the Westminster Board of Works?—I am.

3324. The public lights of the district within this board of jurisdiction are lighted, are they not, by the Chartered Company, the Equitable, and the Western?—Yes.

3325. Are you charged 3 *l.* 15 *s.* 6 *d.* per light?—By the Chartered; the Equitable 4 *l.* 2 *s.* 6 *d.*, and the Western 3 *l.* 13 *s.*

3326. Are they all for the same quality of gas?—No; the Chartered is for two-and-a-half feet of cannel gas; the Equitable is common gas, four-and-a-half feet; the Western two-and-a-half feet of cannel.

3327. Was your Board desirous of appointing a gas examiner under the provisions of the Act?—They were.

3328. Did you take any steps in negotiation with other parishes with the companies?—We did; I handed in that evidence the day before yesterday.

3329. Has it ended in an arrangement or an appointment?—It ended in no appointment.

3330. Who is it objects to appoint the examiner?—The board did not appoint the examiner. Believing that the Act was too intricate for them to carry out, they tried to get the vestries and boards surrounding the district to appoint an efficient person, but that negotiation fell through.

3331. *Chairman.*] You have not done it, in short?—They have not done it.

3332. Mr.

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3332. Mr. *Hoggins.*] Did the gas companies refuse to agree to the appointment?—They did not refuse about the appointment of the examiner; they had nothing to do with the appointment.

3333. Did you propose a meter to every 12 lamps?—We did.

3334. And did the companies refuse unless they had a meter to each lamp?—They did.

3335. That you would not assent to, because it was too great an expense?—Just so.

3336. So that there is no arrangement as regards that meter. Is the price, 3 *l.* 15 *s.*, satisfactory to you, or not?—The Board were anxious to have a meter attached, because the ratepayers were constantly seeking for them to have the consumption of gas tested; that was the reason why we wanted a meter.

3337. Is that the same with regard to the other charges?—It is.

Cross-examined by Mr. *Burke.*

3338. Now, just let us know; you have not appointed an examiner because other parishes would not concur with you; you could have done it yourselves?—We could, but we were anxious to appoint an efficient person; not to have one for our own district.

3339. The companies did not concur with you; what had they got to do with your appointment?—Nothing whatever; I answered that before; they had nothing to do with the appointment.

3340. You wanted to put a meter to every 12 lamps, and the company told you, "That is not a fair way of measuring, but if you want to measure fairly, you must have a meter to each lamp"?—They did.

3341. Then, I think, you agreed to try one street as an experiment, and they assented to it, but you have never done it?—They did agree to it, but we have never done it.

3342. Mr. *Hartley.*] What number of hours are the lamps lighted?—From sunset to sunrise; we have had no formal contracts with the company since the passing of the Act of 1860.

3343. Mr. *Burke.*] Have not the Chartered Company reduced their price?—They have.

3344. You should have stated that; you stated that 3 *l.* 15 *s.* 6 *d.* was the price; what is the price they are charging?—They are charging 3 *l.* 15 *s.* 6 *d.*; the Equitable, 4 *l.* 2 *s.* 6 *d.*; and the Western, 3 *l.* 13 *s.*

3345. Have not they reduced their price from 3 *l.* 15 *s.* 6 *d.*?—They reduced their price in 1860; this is the statement from 1856 to 1866.

3346. You have stated, and it is on the notes, that they charge you 3 *l.* 15 *s.* 6 *d.*, and I am informed they charge you nothing of the kind; what do they charge you?—£.3 15 *s.* 6 *d*, which includes the lighting and repairing of the lamps.

3347. What is the charge now?—That is the charge now, in 1866.

3348. That includes lighting?—Yes; extinguishing, and the repairs of the lamps.

3349. Mr. Alderman *Lusk.*] Do the companies charge you just what they please for the gas; have you any remedy against their charge?—When we want to enter into a new arrangement, we write to them for their prices for so many feet of gas.

3350. And if you do not agree to their price, what do you do?—We have no remedy at all; we must pay what they please.

3351. Then they do charge just what they please, and you have no remedy at all?—None.

3352. Mr. *Hartley.*] Do you know what the gas costs you per foot?—No, I do not.

3353 Mr. *Burke.*] Have you worked out how much you pay per 1,000 feet?—No, I have not.

Mr. *Samuel Hughes,* called in; and Examined by Mr. *Sargood.*

Mr. *S. Hughes.*

3354. HAVE you turned your attention to the question of the public lighting by lamps?—Yes, I have for some years.

3355. Can you give us your opinion of what is called the contract system,

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that of lighting at a fixed price per lamp?—I think it a very objectionable system, because in point of fact in the great majority of cases where those contracts exist it is simply in the power of the lamp-lighter to give a good or a bad flame as he chooses; in many cases there are no means whatever of controlling a lamp-lighter as to the way in which he chooses to turn the tap; consequently one sees the taps turned on at all kinds of angles, admitting in some cases far more gas than in others.

3356. I believe those contracts usually embody the idea of the company supplying a fixed number of feet per hour?—In the majority of the contracts in the metropolis quantity is specified, but at the same time there are many contracts which really specify no quantity.

3357. Then where the quantity is specified, in your opinion is there any means of testing that satisfactorily to the consumer in the absence of meters?—The process of testing in the absence of meters is a very laborious and a very tedious one; I did make a number of experiments about 1859, but they were very expensive; they involved the employment of men throughout the night, who were employed with pressure guages to take the pressure at each lamp; they afterwards involved the taking off the burners from the lamps and trying them with experimental meters; it was on the whole extremely expensive, and a very small proportion of lamps could only be tried; it was attempted to ascertain the consumption of large districts by trying a certain small proportion of lamps; that was the only way in which it could be done; altogether the system was far less satisfactory than the system of trying the quantity by meter.

3358. Are you enabled to speak, of your own knowledge, as to the rate of prices charged by the gas companies after the Act of 1860 came into operation, and how far, if at all, the price was changed?—It is difficult to answer that question generally, but in some cases I know the prices charged are quite up to what the companies are entitled to charge under the Act, and probably, according to the reductions of prices now announced, some of those prices will have to come down for public lamps.

3359. Do you know any good reason why the gas should not be supplied for public lamps by means of meters, in the same way that it is supplied to private consumers?—I think it most desirable that it should be so supplied; I think it far more satisfactory both to the consumer and to the seller of gas that meters should be used; in fact in all recent Acts of Parliament the companies take power to compel consumers to burn by meters; notwithstanding that the strange anomaly prevails that they resist lighting the public lamps by meter; they always insist, as far as I understand, upon the lamps still being lighted by contract under the old system.

3360. I believe there has been, during some few years past, a very considerable reduction in the price of gas to private consumers?—Considerable reductions are either made or announced by all the companies; I do not think all the companies have actually reduced at this moment, but they have announced their intention to reduce.

3361. Do you find, with regard to the public lighting, that any proportionate reduction has been made under that head?—No, I do not think the reduction is proportionate; at the same time there may be many contracts in existence which have not had time to get under the action, as it were, of the reduced price to the consumers; those contracts may be in force possibly, notwithstanding the reduction to the consumers; I do not know how that is; I have heard that no alteration in public lights has been made corresponding to the reduction to the private consumer.

3362. You have spoken of your own experiments upon public lamps?—Yes.

3363. Will you tell me what you found from those experiments was the average consumption per hour?—The experiments were tolerably extensive, made in about nine parishes of the metropolis, and the gas of, I think, six or seven companies was tested; in the public lamps the means used are that of taking the pressure at every hour throughout the night.

3364. You say you see no difficulty in public lamps being supplied by meter?—I do not: would you allow me to finish the answer to the last question; you asked me what result I found on testing. The result I found in all those parishes where I tested the gas was, that the consumption on the average was $3\frac{1}{2}$ feet

$3\frac{1}{2}$ feet an hour instead of 5. I gave all that evidence, I may say, at great length in 1860, just after the experiments were made.

3365. Do you think one of the modes of regulating the cost to the consumer would be that adopted by using meters?—I do.

3366. Is it within your experience that meters have been adopted for public lighting?—Yes; in a great number of towns the average meter system has been adopted, that is to say, one meter has been attached to every twelfth lamp; that system prevails in Torquay, Worthing, in Birmingham, in Nottingham, in Leamington; it is coming into action; and Salisbury and a number of other towns have the same system; and Parliament has recently sanctioned it in the case of several gas Acts; they sanctioned it the year before last in the Gas Acts of Birmingham and Nottingham; last year in the Leamington Act; and in previous years they sanctioned it in the Acts of Reading and a number of other towns.

3367. You have heard, probably, of the proposition by some of the companies to light the public lamps by meter conditionally, on a meter being attached to each lamp; do you think that a fair or reasonable offer?—I believe it to be utterly unreasonable; I believe it to be a direct prohibition of any such thing as lighting by meter; in the first place, in most towns to carry that into effect the whole of the lamp posts would have to be re-cast, because the only reasonable way for fixing a meter is by placing it inside the post; therefore, all the ordinary lamp posts would be perfectly useless, and would involve an enormous expense, something like from 3 *l.* to 5 *l.* per lamp post; I know in many towns for which I have been concerned they have considered it a prohibition; they cannot think of adopting it unless the companies will consent to average meter registration.

3368. Do you consider, from your practical experience, that the average meter system is fair as regards the companies?—I consider it perfectly fair, proper means being taken to make the metered and unmetered lamps burn alike; it must be coupled with precautions of that kind.

3369. Do you believe the adoption of such a system would be a practical saving of cost to the public?—I believe it would save 25 or 30 per cent. in the public lighting.

3370. Now, with regard to the question of price, as affected by capital, have you turned your attention particularly to the clause of the Bill of 1860 upon that subject?—Yes, I have; my attention was first called to the capital of the London companies during the progress of the Metropolis Gas Act of 1860, and ever since that I have watched and analysed their accounts, and attempted to ascertain whether their capitals were anything like proportionate; I find they are very far from being so; that they are extremely anomalous in amount.

3371. Are you of opinion, under existing circumstances, and having regard to the uncertainty of amount of capital, that the enactments of 1860 are advantageous to the consumer, or possibly ever can be?—I think that under the enactments there will always be great irregularity in the price of gas charged in the metropolis. Those irregularities prevail at the present moment; some companies supply at 3 *s.* 4 *d.*, and others are charging, at this moment, 4 *s.* 6 *d.* Those irregularities, I think, must necessarily be caused, to a great extent, by the irregular capitals on which the 10 *l.* per cent. dividend is allowed; it is a fixed rate of division, applied to capitals extremely various in proportionate amount.

3372. Just tell me, in the short terms of a proposition, what do you consider the proper business of a gas company?—Simply to distil coal, convert it into gas, save the products which remain after the gas has passed off, and sell them to the best advantage, at the same time that they sell their gas to the consumers for being burned.

3373. Is it your opinion that the capital of the company ought to bear more positive relation to the quantity of coals they distil?—Yes; the capital should be in proportion to the tons of coal which they are capable of turning into gas.

3374. Have you inspected the public returns furnished by the companies to Parliament, with the view of making some calculations about them?—I have ever since they were first presented to Parliament, from the year 1860 to the present time.

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3375. Are you able from those caculations to tell me what the amount of capital per ton is, as represented by the consumption of the various companies, on those returns?—Yes.

3376. I think you have taken the 13, have you not?—I have taken the whole 13 companies, and the capital of the Chartered Company is represented by 5·37 for each ton of coal carbonized; the City of London, 7·45; the Commercial, 5·48; the Equitable, 7·32; the Great Central, 5·18; the Imperial, 6·14; the Independent, 4·35 only; the London, 7·67; the Phœnix, 8·59; the Ratcliffe, 5·27; the South Metropolitan, 4·74; the Surrey Consumers', 6·06; the Western, 10·89.

3377. Now, I see the two extremes of these are 4·35 for the Independent, and the other extreme is as much as 10·89 for the Western?—That is so.

3378. Do you conceive such a discrepancy as that can be at all warranted by the actual cost of working the coal into gas?—It has nothing to do with the working, because those are simply the amounts of capital on which certain dividends are sanctioned by Parliament.

3379. Do you conceive that the cost of turning coal into gas can in any way account for the discrepancy in these proportions you have just named?—No; the cost of turning coal into gas cannot account for it.

3380. Then the magnitude of capital must arise from some other artificial or accidental source?—No doubt.

3381. Having regard to that, do you consider it at all fair that a fixed rate of dividend should be applied to these uncertain amounts of capital before the consumer can get an advantage in the reduction of price?—I think it a great disadvantage as affecting the consumer irregularly; for instance, the Independent Company could pay the 10 per cent. on their capital with a price added to the cost of producing the gas of about 11 *d.* per 1,000 feet of the gas sold; but the Western would require more than 2 *s.* to do the same thing; therefore there is that irregularity as against the consumer.

3382. Does that give rise to very great anomalies on that imaginary dividing line between two districts, where two consumers in the same street for the same gas are paying very different prices?—No doubt it does so; where a line runs along a street, the adjoining street may be paying a very much higher rate than the other; or the line may possibly run in the centre of a street.

3383. Can you give any instance of the difference of price between two contiguous companies?—Yes; in the South Metropolitan district at this moment the company is charging 3 *s.* 4 *d.*; in the London district, closely adjoining, I believe they are charging 4 *s.* 6 *d.*; in the Phœnix district they are charging something like 4 *s.*, if not 4 *s.* 6 *d.*, at the present time; there are those irregularities now existing; the Independent, again, which is under the Imperial, is charging 3 *s.* 4 *d.*, and the Imperial is charging 4 *s.* 6 *d.*, or 4 *s.* at all events; I am not quite sure as to the exact date when the reductions have taken place.

3384. If the public are not to get any advantage of a reduced price until after the companies have realised certain profits, do you think that at all a fair way of suggesting a public advantage?—I think it is very unfair as between one part of the metropolis and the other.

3385. By "profits," do you understand that which is left after deducting the expenses of the establishment from its receipts?—The whole expenses of the establishment, including the raw material, labour, and every other expense necessary to produce the gas.

3386. Then, I presume, the expenses of working as they increase would reduce the profit?—No doubt.

3387. If the public are to get no advantage until a maximum profit is attained, increase of expense in working would have a tendency to deprive them of any chance of getting a reduction?—It would do so, of course.

3388. What are the ordinary expenses of working; I believe you have a tabular form of them under certain heads?—The ordinary expenses are very well classified in the form prescribed by the Secretary of State for the company to render their accounts.

3389. Just be good enough to mention them by name and tell us what they are in that classification; this is one of your calculations (*handing document to Witness*)?—It is; this is taken from the accounts printed by Parliament. The Chartered is the first company: "Directors' allowances, salaries, collectors' commission, rents, rates and taxes, stationary, printing, &c., payments to auditor,

tor, coals, purifying materials, supervision of labour, retorts, tools, ordinary repair, &c." There are some more words in; but that is the commencement of the heading, "Ordinary repair of mains, repairing and replacing meters, additional meters, interest, law and Parliamentary expenses, bad debts, reserve fund and balances."

3390. Under those various headings, have you, referring to the details furnished by the companies themselves, calculated the cost of every thousand feet of gas under those particular classifications?—Yes, I have, using the items which the companies themselves gave in their accounts, not challenging any of them in any way, but simply working them out to show the relative rate of working in each of the companies.

3391. Now, I think you have on that schedule you are reading from, taken the Chartered, the City of London, and the thirteen companies in succession?—Yes.

3392. Just tell me what is the extreme of the cost per thousand feet that you find out of the thirteen companies; give me the two extremes; I think they are the Imperial and the Western?—You are speaking now of the cost of working, excluding raw material altogether, because that is the fairest way, and comparing them, I find the London Company works at a cost of nearly 27 *d.* per thousand feet sold: and, on the other hand, the most economically working company, the Equitable, works at a cost of $17\frac{1}{2}$ *d.* per thousand feet, as against 27 *d.*, making a difference of very nearly 11 *d.* in the actual cost of making the gas, independently altogether of raw material.

3393. That I believe you give as the aggregate of all the expenditure together?—That is all the expenditure as it appears in their accounts, excluding the raw material altogether.

3394. Do you find that varies in the thirteen companies in a proportion not to be accounted for by the mere cost of manufacturing gas?—I think the cost ought to be as nearly alike for all the companies as possible.

3395. Do you know any reason why the companies who are supplying the metropolis should not make gas at the same cost, each with the other, and be able to sell it to the public at the same price?—I think that ought to be the case; they ought to make it at the same price per thousand feet, excluding raw material.

3396. Then is it your opinion that the heavy tax which is paid to the shareholders in the shape of 10 per cent. dividend on a varying capital, deprives the public of the chance of getting gas at a less price?—That and other causes; that and the non-examination of the accounts, and the irregular way in which the results appear when tested in this mode; that is to say, when they are all reduced to the same unit for the purpose of comparison, they show very different rates of working, and very different expenditures, and the capitals all being very different the charges for gas necessarily over the metropolis become different, unless some are satisfied with much less interest than others.

3397. You do not find any means of attributing that difference in charge to the difference in the cost of working and of material?—No; I think the cost of working should be the same, or very nearly the same in all; the cost of the raw material may vary, but the working expenses should certainly be the same per ton.

3398. Supposing the present system of laying the per-centage on capital were continued, what remedy would you propose for relieving it of the pressure and inequality which now exist?—I think the capitals should be adjusted so as to represent something like a proper proportionate amount; I do not think they should be allowed to have a fixed dividend on all their irregular capitals.

3399. What process would you suggest as a means of accomplishing that?—That the accounts should be thoroughly examined, to see what discrepancies exist in them, to see what sums have been charged to capital as compared with the charges to revenue; it is easy to trace in the accounts of some of these companies that the works must have been extended out of revenue, because the charges in repairs for some of them are so very excessive as compared with others.

3400. You have not prepared a calculation of how the profits have been applied?—Yes, I have, but its details are not quite ready; they are being printed, and will be ready to-morrow morning.

Cross-examined by Mr. *Cripps*.

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3401. I think your first complaint is with reference to the public lamps?—That is the first subject.

3402. And they have been supplied generally under contract made with the companies for the purpose of supplying them?—They have been supplied under contract.

3403. Do you know in the Metropolis Gas Act there was a section expressly put in that that matter should be referred to arbitration, if there was any difference between the companies and the vestries, or the public authorities as to what should be a proper rate to charge?—Yes, that would be as to the contract price to be paid; but that clause gave no power to any arbitrator to determine that the lamp should burn by meter.

3404. First of all, your complaint is a complaint as to price; I will read the clause, it is clause 38: "If any difference arise between the local authority and the gas company with respect to any alteration in the test, or to the rate to be charged for gas supplied, or for lighting any public lamp, the difference shall be referred to and be determined by arbitration in the manner prescribed by 'The Companies Clauses Consolidation Act, 1845,' with respect to the settlement of disputes by arbitration;" were you aware there was such a clause as that?—Oh yes, perfectly.

3405. Are you aware of any such dispute having arisen?—I can give you a very obvious reason why arbitrators have never been appointed; it was impossible that such a clause as that could work.

3406. First, let us have the fact; no such case that you know of, has ever been referred to an arbitrator?—I am not aware of it; but having been a member of the Board of Works in Westminster for a number of years, I can tell you exactly the feeling on that subject, and why it never has been used; the reason is this: the arbitrator would only be guided by the terms of the Act as to the price the company are entitled to charge, and the Act expressly says that the company are not to charge for public lamps more than the lowest price paid by any private consumer, except under special contract, and of course the operation of those words would be, that they would take care to have a contract if they supplied any consumer below the ordinary rate; therefore it comes to this, they would always be justified in charging the very highest price they charged to any ordinary consumer.

3407. I suppose you know there has been no attempt to see how this Act would work, or no attempt to act upon this clause?—I do not think any arbitrators have actually sat; I have been appointed myself an arbitrator on that very point by one of the London parishes, but we never met.

3408. Were you appointed between the local authority and the gas company?—I was appointed on the part of the local authority, and another gentleman was appointed on the part of the company.

3409. You would have to appoint an umpire, was such umpire ever appointed?—No, he was not; the parishes being, of course, aware that it could not possibly work.

3410. That has been your impression?—There is no question about it.

3411. The fact is, there has been no attempt whatever to work upon this clause; the clause before that, that you refer to, is the 37th: "The gas company shall not charge a higher price by the one thousand cubic feet for gas supplied to any local authority than the lowest rate by the one thousand cubic feet from time to time charged by them to any private consumers, otherwise than by special contract in writing, in the district supplied by the gas company"?—That is the clause, and those are the words which are exceptionally introduced in the Metropolis Gas Act, aud which scarcely appear in any other Act in the kingdom; they entirely neutralise the possibility of getting the gas lower than the price paid by the lowest private consumer.

3412. That has been your opinion?—There is no question about it; there cannot be a second opinion about it; I know many gas Acts, in which the local authorities are to be supplied at the "lowest rate charged to any private consumer," without those last words; there it is a real advantage.

3413. "Otherwise than by special contract in writing?"—Those words being left out.

3414. Now,

3414. Now, with reference to the proper mode of charging for gas supplied to the public lamps, you would desire that they should be paid for by meter?—I would, the same as private consumers pay.

3415. Have the companies been willing that meters should be supplied to all the lamps?—The companies have always insisted, as far as I understand, that if meters are used at all for the public lamps, the meter shall be supplied to every lamp, which, I have already explained, is entirely prohibitory of the possibility of using meters at all.

3416. They have either made the contract with the arbitration terms of this Act, or they have said, we will have meters to every lamp?—They have offered that, but it is of no use to any parish; no parish would be so foolish as to do it.

3417. You would propose one meter to a certain number of lamps?—One meter to twelve, as in Acts of Parliament, where the average meter system has been sanctioned.

3418. Is the fact that the mere application of the meter to the particular lamp will prevent as great quantity of gas being supplied to it as to the other eleven?—Certainly not; it has nothing to do with it, because in the application of meters to a proportion of the public lamps the lamps are adjusted after the meter is applied, so that it has nothing whatever to do with it.

3419. It would require some different adjustment in the lamp to which the meter is applied to the adjustment in the other lamps?—No; it is the same adjustment applied, so as to make them all burn equally, meter or no meter. It is done in Reading and Torquay, and numbers of other towns; I have done it myself in Reading, and they burn precisely alike; they have simply two taps, one is the governing tap beyond the control of the lamplighter, the other he turns on; when those governing taps are adjusted by the superior authority, the lamplighter has no discretion in the matter. The governing tap renders all the lamps alike.

3420. Is there, or is there not, a difference in the lamp at which the meter is applied from the other lamps?—None whatever, according to the system of adjusting all the lamps to burn equally. I say the system is not fair without an equitable adjustment, but with it it is perfectly fair.

3421. But merely putting a meter to one lamp, and not putting it to another lamp, would not be a fair test?—It would not be fair if there were no adjustment.

3422. Something more requires to be done?—No doubt, the one party would require it in one case, and the other party in the other. Where all the lamps are adjusted alike it is perfectly equitable to both parties, and they thoroughly understand that in towns where it is adopted. It seems to be perversely disputed on the other side; I cannot understand it.

3423. There can be nothing unfair if a meter is applied to each lamp?—No, but it would be excessively troublesome; it is impracticable on the ground of expense in the first place; it is impracticable on the ground of the constant attention it would require, the constant reading; it would take a staff of men all their time to be reading these meters; it would be utterly impossible to do anything of the sort.

3424. And yet you have the supply by contract, which professes it shall be a fair contract?—Unfortunately no profession can make it fair, when the whole duty is in the hands of the gas companies and their servants to light and adjust the taps as they please; there is no element of fairness in it.

3425. And that would apply in the same way to all contracts between the company and the consumer?—It would be exactly the same thing as if the company were to contract with private consumers to go into their houses and light their lights all over the houses.

3426. I was putting the alternative?—It would be exactly the same thing as that; no consumer would put up with that injustice.

3427. Now a word with reference to the expenditure of different companies; as I understand you, you have taken the amount of expense per ton of coal with all of them, and averaged it?—Not averaged it; I have taken the amount per ton of coal with all the companies, and reduced them also to the standard of 1,000 feet of gas.

3428. That assumes, does it not, that the cost of turning coal into gas is the same

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same in all cases, but there is something else which makes a difference?—No; the expenses which I have compared are, or ought to be, the same in all cases, because they are all the expenses, simply deducting the raw material.

3429. But it takes no account of the varying amount of capital the different companies may have employed about their works?—That particular calculation has no reference to capital, it is the actual working expenses.

3430. But the calculation would be altogether incomplete unless you added that the amount of capital of each company, and the cost of the construction of the works?—In that case you would make two irregularities instead of one; I say the whole thing is irregular, because the capitals are anomalous; again, the whole thing is irregular, because their expenditure is anomalous; you do not correct these two irregularities by putting them together.

3431. How came the capital first of all to vary in amount; in one case, the cost of the ground upon which the company's works are erected may be much greater in one locality than another?—But that would hardly make the capital of one company two and-a-half times as much as another.

3432. That is one matter which may vary it very much?—It might effect it to a small extent.

3433. Or one company might be compelled, after buying ground and erecting their works, to turn out, to find other ground and to erect their works again?—That would be minutiæ on a great scale; it would scarcely affect the capital.

3434. Let us take the expense of laying mains; one company may be close to its consumers, and have a very short length of main; another company may be some way from its consumers, and have a considerable length of main?—The companies seem to have regulated that amongst themselves, for their districts are scattered all over the metropolis; you see the Chartered Company in two places; there may be a little in that.

3435. Would not that affect the original cost?—I do not think it does in considering the supply of a place like the metropolis.

3436. Take another case, of a rather outlying company, like the Imperial, that has to supply a very large district of country where the consumers may not be very close together; another company, the City of London, supplies the consumers where they are all very close together; would not that make a very considerable difference?—No; I think the Imperial, which you contrast with the London, is very well circumstanced, because they have a number of works situate as well as they could possibly be placed for supplying their different districts; they have works at Fulham for the west end of their district, at Bow at the east end, and their works in the centre; they have three distinct sites for making gas; I think they are extremely well off in that respect.

3437. These are necessities upon them; let them have as many sites as they may, if their consumers do not lay close together, they would not be able to supply them so well as if they were near the works?—I think, on the large scale, comparing the companies in the metropolis, that makes very little difference.

3438. Now, with reference to the locality of the works, supposing some to be situated close to the river, others some distance from it, would not that make a difference in the cost of the coal?—That makes no difference in this calculation, because I have already said raw material is entirely excluded; that is one of the elements that would affect them, no doubt, and if I had attempted to compare them with the raw material, that calculation would have been open to an objection.

3439. You leave out the raw material?—For that one, amongst other reasons, that it would scarcely be fair; the rates they pay for coal I know do vary 2 *s.* and 3 *s.* a ton in different parts of the metropolis.

3440. Now you have taken, as I understand, the cost you find of the different companies turning coal into gas, at so much per ton?—From their own accounts.

3441. Have you ascertained, from any return, how many tons of coal each company uses?—No; but I have the means of calculating the tonnage used by each company in this way: the companies themselves return the price they pay for coal in each year; a return, recently presented to Parliament, moved by Mr. Moore, gives the prices of coal paid by gas companies for the last ten years, and, taking those prices, and applying them to the gross price the company pays for coal, it is easy to get the result.

3442. You have not taken the actual amount of tons, but you have made an estimate?—It is not an estimate; it is an exact calculation from the company's own return. In the accounts presented to the Secretary of State they give the gross amount they pay, and of course that gives you the tonnage of coal: it is no estimate.

3443. Do you know how that is made up; whether the price of coal in that way is calculated always the same per ton; whether it includes delivery in some cases; have you gone into that at all?—I am not aware as to that, because the accounts are not sufficiently explicit to show it.

3444. I understand you to object to the price being regulated by the dividend; that according to the amount of dividend so the reduction of the price shall be?—I do not think I have said that.

3445. At any rate that provision is a provision applied by the Gas Clauses Act, not to the metropolis but to all gas works?—Having reference to a proper amount of capital; I do not understand in general gas legislation the companies are allowed to put down any amount of capital they please.

3446. First about the general matter, that is, the mode by which the Gas Act, applied to the whole country generally, regulates the price ultimately?—The Gas Clauses Act of 1847 empowers gas companies to divide 10 per cent. on their share capital, but then that share capital is always subject to some investigation; the company are not entitled to raise their capital to any arbitrary amount they please.

3447. They cannot do that without coming before Parliament; Parliament supervises all applications for new capital?—No doubt.

3448. This is a clause which you are no doubt aware of. First of all, the profits of the undertaking are to be divided so that they shall not exceed the prescribed rate, or 10 *l.* where no rate is prescribed; that, as you say, properly regulates ultimately the cost to the consumer. Then there is the 35th clause: "In England or Ireland the Court of Quarter Sessions, and in Scotland the Sheriff, may, on the petition of any two gas ratepayers within the limits of the Special Act, nominate and appoint some accountant or other competent person, not being a proprietor of any gasworks, to examine and ascertain at the expense of the undertakers (the amount of such expense to be determined by the said Court or Sheriff) the actual state and condition of the concerns of the undertakers, and to make report thereof to the said Court at the then present or some following Sessions or to the Sheriff; and the said Court or Sheriff may examine any witnesses upon oath touching the truth of the said accounts and the matters therein referred to; and if it thereupon appear to the said Court or Sheriff that the profits of the undertakers for the preceding year have exceeded the prescribed rate the undertakers shall, in case the whole of the said reserved fund has been and then remains invested as aforesaid, and in case dividends to the amount hereinbefore limited have been paid, make such rateable reduction" in the way prescribed by the Act?—I am aware of that.

3449. That is the provision made by Parliament, not for the gas companies only in the metropolis, but for all gas companies throughout the kingdom?—That is in the General Gas Clauses Act, no doubt, but that does not touch capital at all; it only touches expenditure and receipts; it only touches current account; it does not touch capital.

3450. That is your opinion, that that clause does not enable the company to go into the question of capital at all?—I should hardly think it does.

Re-examined by Mr. *Webster*.

3451. You have been asked a number of questions by my learned friend, which you say are only minutiæ; first, about the price of coal; is that a material element in the question of the price of gas?—The price of coal is a very material element no doubt, in connection with the return of the residual products; I always take the two together, because the price of coal in itself is not an index of what the price of gas ought to be, but the whole subject of the raw material is, of course, a very material point.

3452. The price of coal in itself is not sufficient, but you must take it in connection with the residual products?—No doubt.

3453. Is it a fact, that in many cases where the price of coal is highest, the

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price of the residual products also is the highest?—That is very much the case; in fact, it is almost a general proposition that when the price of coal is high, the products are also high, because one of the material products is coke, and coke is used for heating purposes very much, in the same way as coal, and when coal has a high value coke has necessarily a corresponding value.

3454. Has coke a high value in London?—It has a certain value, but scarcely corresponding to its value as a fuel as compared with coal; coke in London sells for perhaps 10 *s.* a chaldron.

3455. Then, at all events, so far as the price of coal in itself is concerned, you must take it in connection with the whole matter of residual products?—No doubt; as an illustration of how forcible it sometimes is, in Birmingham the raw material costs nothing, because they get the whole cost of the coal back in products.

3456. The residual products, owing to the demand for coke and other things, are such that you may take the cost of coal as nothing?—Quite so.

3457. Now my learned friend asked you several questions about the Imperial as being an extended district of the City; are those districts very different?—They are very different; of course the population is much more concentrated in London than in the northern district supplied by the Imperial.

3458. Do you happen to know whether the charge for gas is the same both in the Imperial and in the City?—The charge of both has been 4 *s.* 6 *d.* up to quite a recent period; then I believe each have announced their intention of reducing the charge to 4 *s.*, but the charge, so far as I am aware of, ever since 1861, has been certainly 4 *s.* 6 *d.* in each.

3459. Mr. *Richards.*] I believe it was reduced last July?—I really did not know the price was reduced from last July, but up to that time it has been 4 *s.* 6 *d.*, and in the City of London it has also been 4 *s.* 6 *d.* since they raised their price immediately after the passing of the Metropolis Gas Act.

3460. Mr. *Webster.*] My learned friend asked you whether the district of the Imperial was not peculiar or different from the others?—He did.

3461. I only put it to you whether the districts of the Imperial and the City of London are not very different indeed?—They are different.

3462. But though they have been so different, their prices for gas have been the same?—They have; and in point of fact for six or eight years the price in the City of London was lower than in the Imperial district, the City of London having charged 4 *s.* and the Imperial 4 *s.* 6 *d.*

3463. My learned friend also asked you about the cost of land, and other things, and you said those were inconsiderable minutiæ?—I think they are.

3464. May I take it, some of these minutiæ, differing in each place, will in one place be on one side, and in the other place on the other side, of the account?—They will no doubt frequently balance each other.

3465. To have them on one side would be rather an exceptional case probably?—Yes.

3466. But at all events, whether they are all on one side, or some on both sides, in your opinion is the sum of these minutiæ so inconsiderable as not to affect the price of gas?—I do not think it affects the London companies, looking at them as a group for the purposes of comparison.

3467. You have been asked several questions about applying meters to lamps; you propose to deal with them in sets of twelve?—For the purpose of saving the destruction of the present lamp-posts, and creating economy in the cost of the meters.

3468. Is the suggestion of the companies that a meter should be applied to every lamp a condition that is prohibitory to the application?—I think it entirely so.

3469. Is there any practical difficulty whatever in applying one meter to every 12 lamps?—There is no difficulty whatever; it has been most successfully done wherever it has been attempted; in one particular case, in the town of Bolton, it was the proposal of the gas company themselves to have one meter for 12 lamps, and they have always been thoroughly satisfied with it.

3470. Are you giving this opinion on the experience of several towns?—Of several towns for whom I have acted in that very matter, and know all the circumstances.

3471. What are they?—Reading, Torquay, Salisbury, Bolton; they are now coming into action in Birmingham and Nottingham.

3472. Is there any such difference in London as to prevent the application of this system?—I see none whatever.

3473. Has no difficulty been suggested to you?—No difficulty whatever in applying average meter registration, except such points as have been started on the other side, which have really no application to the question.

3474. My learned friend asked you about the Arbitration Clause, and you said it would not work as to the price of gas?—It could not possibly work, because the arbitrators would find that the companies were entitled to charge for the public lamps the minimum price charged to the private consumers; and they do not, as a rule, attempt to charge more than that at the present time, and therefore the arbitrators would really find they could do nothing under the Act.

3475. Do you believe, from your experience, that the Arbitration Clause is not a practicable clause?—I think it is of no use.

3476. You were asked several questions about capital, as to whether the Gas Clauses Act excluded altogether the question of capital, and you said you were not prepared with the account to-day; that document has now arrived; I believe you have made an account from the different companies?—This is an account showing the profit in each year made by the companies on their share capital; it shows a very varying rate; I find one company making as large a profit in one year as 29 per cent. on their share capital; that was the Independent Company, in the year 1863.

3477. Take the four years, what profits have the Independent Company made?—12·25, 14·21, 29·16, 19·03; the average for the whole four years being 18·66 on their share capital, after paying interest on their loans, if they have any. These are from their own accounts, without any challenge as to any of the items of expenditure being in excess; there is no doubt they are in excess in some of the companies' accounts, but there is no attempt made to fix that in this statement.

3478. In order that we may have it clearly in the notes, the account that you now hand in is compiled from the return of figures given by the companies themselves?—Yes, and printed by Parliament.

3479. Assuming that they were correct, without any challenge as to whether there should be any deduction or not?—Quite so.

3480. Now, let us look at the Equitable; what does that show?—The Equitable in 1861 made a per-centage on their share capital equal to 13·92. In the next year it was 13·73; the next year, 13·07; and the next, 13·23; the average of the four years being 13·46.

3481. *Chairman.*] That is the steadiest rate of any of the companies apparently?—That is the steadiest in amount, the whole of the years giving about the same.

3482. Mr. *Webster.*] Now the South Metropolitan looks pretty well, too?—That, in 1861, was 14·85; the next year, 11·61; the next, 11·78; and the last, 12·14; the average being 12·51 per cent., just over 12½.

3483. This is the state of things under the operation of the Metropolitan Gas Act?—It is since we have had the accounts in such a form that anything could be made of them; formerly the accounts deposited under the Gas Works Clauses Act were so imperfect that it was impossible to analyse them; but since the form of the Secretary of State has been adopted it is possible to analyse them. (*The Witness handed in the document showing the absolute profit of gas companies supplying the metropolis.*)

Vide Appendix.

3484. Now, about the 35th section of the Gas Clauses Act; whatever may be the true construction of that section, as matter of fact, were the returns of that Act of Parliament of any value for getting at the profits?—All the accounts I have ever seen deposited under the Act of 1847, I think, with scarcely an exception, were utterly useless for any purpose of investigation; they never, for instance, perhaps give more than two or three items; I have seen accounts where they said so much receipts in one year and so much expenditure; it was impossible to make anything out of these accounts; and then, in many of the accounts capital was so mixed up with expenditure as to make them perfectly useless.

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The *Chairman* said that what took place prior to the passing of the Act of 1860 was not relevant to the present inquiry.

Mr. *Richards* proposed to reserve his cross-examination on the document just handed in on the undertaking that Mr. Hughes would be recalled on the following morning to put in further documents, when he would have an opportunity of cross-examining him.

3485. Mr. *Paull.*] What reason do the companies give for declining to group the lamps with one meter to every 12?—The usual allegation they make is that one in 12 is not a fair index of what all the lamps burn.

3486. Then in your judgment that is not a good reason?—I think not, because the lamps can be so perfectly adjusted as to burn all precisely alike, meter or no meter.

3487. What is the net cost of a meter?—From 1 *l.* to 30 *s.*

3488. What is the charge per annum which the companies make as a rule?—For a meter of that kind they would probably not charge more than 4 *s.* a year; perhaps it might be less; I think in the Metropolis Gas Act that they are limited for small matters to charge 10 per cent. on the cost.

3489. Under Section 14, they are limited to the charge of 10 per cent. on the net cost of each meter?—But they put in the net cost, the cost of the service-pipe, and some other things, so that, I believe, in some parts of the metropolis, the consumers' meters are charged about 4 *s.* each.

3490. That, upon 30 *s.*, would be about 30 per cent.?—It would be as much as 30 per cent. upon the 30 *s.*, but not probably 30 per cent. on the meter, the service-pipe, and fitting-up.

3491. You said it would be impracticable to put up a meter to each lamp, on account of the expense?—Yes.

3492. Do you mean to say that when a meter costs 30 *s.* and by Act of Parliament they are restricted from charging more than 10 per cent. on the net cost, that it is impracticable to put a meter to each lamp?—I think so, considering that and other circumstances.

3493. Give them to me; is it impracticable on that account?—Not on that account simply, but then we mentioned a number of other things.

3494. It is not practicable on account of the cost of the meter?—It would not be absolutely impracticable if the cost of the meter were the only consideration, if there were not the question of the lamp-posts, and of superintending so many meters, and of constantly reading them.

3495. What are the intervals in which the companies read the meters?—In towns where meters are used for public lamps, it is usual to read them at least once a month.

3496. What time does it take to read a meter?—Perhaps they would read 60 or 70 in a day.

3497. And you think that the question of time so occupied renders it impracticable to have meters to each lamp on that account?—That is one reason; another is, the cost of the lamp posts and of reading the meters.

3498. But when the cost of the lamp posts was once defrayed, they would be good for all time?—Yes, it would be so; but it seems a very hard case that Boards should have to erect new lamp-posts where they have already old ones, which answer the purpose quite efficiently, which would all have to be abandoned if metered lamp-posts were to be expressly cast.

3499. This Committee is to inquire into the Act of 1860; do you know sect. 23 of that Act, in which "The local authority may provide and keep in repair their own public lamp-posts and lamps, and apparatus connected therewith, and in case of their electing to burn by meter, light and extinguish the lamps, and defray the expenses thereof"?—Quite so.

3500. It was, therefore, contemplated by the Act that meters might be put up?—But, unfortunately, the provision scarcely went far enough, because companies under that clause contend that they are entitled to have a meter to each lamp.

3501. I asked you whether it was not anticipated by the Act of Parliament that meters might be put to each lamp, and then I asked you what the cost of each meter was, which you say would be 30 *s.*, and I have asked you, seeing the cost

cost of the meter, and seeing the cost of the time of the persons who would be employed in reading those meters, do you still maintain it is impracticable to put a meter to each lamp?—I think, considering all the circumstances attending a meter to every lamp, it is impracticable.

3502. What additional cost per lamp would it make per annum?—Considering all the circumstances, probably not less than 10 *s.* or 12 *s.*; there would be the interest of the money for the payment of the meter, the interest of the money which the lamp-posts cost, the extra expense of reading such an enormous number of meters, the supervision they require; I think all these together might well amount to 10 *s.* or 12 *s.* per lamp.

3503. In Clerkenwell we heard there were about 500 lamps, now the 500 meters would be read under those circumstances in three or four days?—Perhaps so; but it would require a person to be constantly employed three or four days in the supervision, and things of that sort, which they would require; it would be very serious. I can only say I have been employed for a number of towns where these propositions have been made to them by gas companies, and wherever the facts of the case are presented to the local authorities of these towns, they have rejected the proposal, and they say it is utterly impracticable.

3504. You say with reference to section 38, that this arbitration section is perfectly impracticable?—I think so, with reference to a reduction of price.

3505. How do you know it, because you have told us you never knew it resorted to?—It has been proposed in several cases, but the parties have seen so much difficulty when they have been convinced by the argument that the arbitrators could really have no power under the Act to vary it below the price paid by the ordinary private consumer; the moment those words are pointed out "except under special contract," it seems to settle everything.

3506. But you never knew it tried, nevertheless?—I have never known it tried, although I have known it go so far as that an arbitrator on each side has been appointed, and then it dropped through; the parties saw the difficulty, and I withdrew from it.

3507. Have you any recommendation or suggestion to offer with reference to the amendment of that section?—I think the difficulty would be almost entirely got over if the simple provision for average meter registration were introduced, as it is introduced in many Acts which have been recently passed.

3508. Sir *William Gallwey.*] Do you happen to know whether the Independent Company has extended largely its supply of late?—I do not imagine they have.

3509. Are you much surprised at this enormous increase of profit in any two successive years, or can you give us any reason why that profit has extended?—I cannot account for the great jump from one year to the other; I account for the large profit on the whole by the very small amount of capital they have; the capital is very small in proportion to that of the other companies.

3510. How do you account for this enormous increase?—It may possibly arise in this way: in the first two years they may have been extending their works out of profit, putting into the repairs more than were actually due to current expenditure, which would reduce the profit; in the next year, 1863, they may not have done that to such a large extent.

3511. Mr. *Staniland.*] You state that the Act of 1860 is insufficient in many respects, although its powers have not been attempted to be put in force; and you say the Gas Clauses Act is really insufficient as to the ascertaining the amount of capital on which dividends should be paid?—I think it is insufficient.

3512. You say it is insufficient, because the accounts rendered under the powers of that Act are so mixed up, capital, receipts, and expenditure, in respect of profits, that you cannot tell?—They are, in many cases.

3513. Are you not aware, under the 35th section, without reference to these accounts at all, the Court of Quarter Sessions had the power to appoint parties to examine into the capital, with a view of ascertaining it?—I should hardly suppose that that power would be claimed by a person ap-

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pointed by the Quarter Sessions, that is to say, the investigation of their capital for past years; I think he would find himself bound to confine his investigations to the current year.

3514. What I want to know is, whether the language of that section is not enough to enable the Court of Quarter Sessions to appoint a person to ascertain the capital of the company? — That is rather a legal question, and I am not prepared to answer it; I can tell you in a case where I was employed myself in the town of Birmingham, it was attempted to put that clause into operation.

3515. You mean to say no language is sufficiently strong to control gas companies; that is about the question?—I think language may be sufficiently strong.

[Adjourned till To-morrow, at Twelve o'clock.

Friday, 4th May 1866.

MEMBERS PRESENT:

Mr. Dutton.	Mr. Paull.
Sir William Gallwey.	Mr. Hastings Russell.
Mr. Hartley.	Mr. Staniland.
Mr. Serjeant Kinglake.	Sir John Trollope.
Mr. Lusk.	Mr. Woods.
Mr. Morrison.	

SIR JOHN TROLLOPE, IN THE CHAIR.

Mr. *Joseph Heron*, called in; and Examined by Mr. *Webster:*

3516. I BELIEVE you are Town Clerk in Manchester?—I am.

3517. How many years have you filled that office?—I have been Town Clerk since the establishment of the Corporation; I think in 1838 or 1839.

3518. It is the fact, I believe, that in Manchester gas is supplied by the Corporation?—It is, and has been since I have had anything to do with the Corporation.

3519. I believe it was one of the first places at which gas was supplied by the Corporation?—The fact is that the gas works were originally established in Manchester by the ratepayers themselves; first of all by a body of Commissioners that had the control and government of the township of Manchester; and when the Corporation was established, including not only the township of Manchester, but also four or five other townships adjoining, the works were transferred by the Commissioners of the township to the Corporation.

3520. What has been the commercial result, financially, of the Corporation having the gas works at Manchester?—I am not quite sure whether I quite understand the question, but the financial result has been this: by the first Act of Parliament, when the powers were obtained by the Commissioners of the township of Manchester, the power of disposing of the surplus profits secured by the manufacture of gas was declared to be applied or applicable to the reduction of the township rates; that was the original provision many years ago, some years before the establishment of the Corporation; it goes back some thirty years; I think it was before 1828; very shortly afterwards, whilst the works were still in the hands of the Commissioners of Police, they wisely obtained, as it appears, a provision that the surplus profits should be applied not to any reduction of rates directly, but for the purpose of improvements within the township of Manchester, and that Parliamentary arrangement, as I may call it, has continued ever since.

3521. *Chairman.*] And you so apply the profits?—Yes, the surplus profits have always been (subject to one interval as regards a portion of them) applied for the purpose of carrying out improvements within the township, or within the city of Manchester.

3522. Mr. *Webster.*] What has been the amount applied in any one year, or any number of years, to that purpose?—The surplus profits have varied in different years; I have a statement here showing the sums from 1860 to 1865, but I may state that I should think we have expended in improvements within the city, nearly one million sterling.

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3523. *Chairman.*] Not all derived from gas?—All derived from gas.

3524. From the profits?—From the profits on the gas; I may state that the whole of the improvements that have been carried out in the city of Manchester (and any gentleman who has visited Manchester will be perfectly well aware that it did require great improvements, and that great improvements have been made) have been carried out by means of the profits that have been obtained from the carrying on of the gas works; we, of course, have powers to borrow large sums of money upon the credit of those works, and we do borrow; we have borrowed very large sums of money, and we repay them out of the surplus profits; in no instance have we made a rate.

3525. Do you repay the interest only, or the principal also?—We repay principal and interest; we are required under all circumstances to do so. Lord Redesdale or Lord Shaftesbury would not allow us to obtain powers to borrow for this purpose unless we had a sinking fund of at least five per cent. upon the amount authorised by any one particular Act to be borrowed, and we have paid off very large sums of money; in fact, we have been constantly paying off, because, as the Committee will see, if an improvement was to cost 100,000 *l.* or 150,000 *l.*, it would be a very expensive way of carrying on that improvement to be making it simply with the profits that we might have received from the gas works; therefore, we borrow the money, whatever it may be, and then repay it out of the surplus profits as we receive them.

3526. You probably have a large standing debt?—We have always a debt diminishing or increasing, according to the improvements.

3527. You borrow with one hand, and pay with the other?—Yes; occasionally the debt runs down to a comparatively small amount; I think it is very small at the present time; I do not think it is 200,000 *l.*, which we consider very small indeed; I will put in the statement which I have here, which will explain exactly what the financial operations have been during these five years (*the document was handed in*); first, I may give you the total receipts for 1860, and probably if I state one year that will be sufficient; in 1860 the gas rents amounted to 154,658*l.* 4*s.* 2*d.*; the amount received from coke, tar, &c. (the residual products), amounted to 14,677 *l.* 8 *s.* 9 *d.*; making a total of 169,335 *l.* 12 *s.* 11 *d.*

Vide Appendix.

3528. The total amount paid that year for cannel coal was 56,177 *l.*; wages, &c., 43,377 *l.*; depreciation of works, 5,000 *l.*?——

3529. *Chairman.*] You charge for that?—Yes, that has only been done recently; it never appeared to me to be very necessary, but our committee have determined to carry it out.

3530. Do you have a reserve fund for contingencies, for renewal of works or repairs?—This depreciation necessarily creates a reserve fund; one of the columns in this table will show the large amount we are paying off every year in reduction of the debt; our capital is of course our power to borrow; whenever we want more money, if the debt has been reduced very largely, there is no difficulty in obtaining any amount that may be required for extensions or renewals; that was almost the first year in which that item appeared; inasmuch as the property belonged to the inhabitants, it was thought scarcely necessary to have a depreciation fund; the interest amounted to 16,255 *l.*

3531. At what rate?—Four per cent.; the average of the entire Corporation debt last year was about four per cent., or a little more; then there is the liquidation of the mortgage debt, amounting to 13,306 *l.*; the surplus paid over, which is the amount available for improvements, was 35,217 *l.*

3532. If you will state the surplus in each year, bringing it down to the present time, that will be sufficient?—The surplus in 1861 was 16,746 *l.*; it is necessary to explain why it falls so low,—that the depreciation had been increased to 11,371 *l.*, and the liquidation to 18,980 *l.*; the next year the surplus is only 7,854 *l.*; the depreciation, 12,179 *l.*; liquidation, 19,330 *l.*; the next year, 1863, the surplus is 22,261 *l.*; the depreciation, 12,666 *l.*; liquidation, 18,609 *l.*; the next year, 1864, the surplus is 27,847 *l.*; depreciation, 12,690 *l.*; liquidation, 17,810 *l.*; in 1865, the depreciation is 13,050 *l.*; liquidation, 17,587 *l.*; and the surplus paid over, 25,758 *l.*; this is taken from the public accounts of the Corporation.

3533. You supply the public with gas, we are informed, at 3 *s.* per thousand feet?—The price of gas within the city is now 3 *s.* 2 *d.* per thousand feet

where

where the quarterly consumption is less than 500,000 cubic feet; in the districts beyond the limits of the city (for the Corporation supplies gas to nearly all the districts surrounding Manchester within several miles) the charge is 6 *d.* per thousand feet extra.

3534. Mr. *Webster.*] Is there any discount upon any of these charges?—I believe not.

3535. What is the price of the residual products?—The price of coke at the principal station was 6 *s.* 8 *d.*, and at the Rochdale-road station, 5 *s.* per ton, until yesterday, when the prices were reduced to 4 *s.* 2 *d.* and 3 *s.* 4 *d.*; I was in the yards the other day myself, and I saw the coke mountains high nearly; they cannot get rid of it at any price; it is a perfect drug, and it is very difficult to get rid of it at all times; they hope, by a reduction of price, that persons will be induced to buy; the price of tar up to the end of February was 31 *s.* per ton, but the new contract just entered into is only 19 *s.* 6 *d.* per ton; ammoniacal liquor is sold at 1 *s.* per degree of strength, by Twaddle's hydrometer, up to six degrees; and if seven degrees and upwards, at 6 *s.* 6 *d.* per hundred gallons; but the contract will expire at the end of next year, and we are now only offered 7 *d.* per degree per hundred gallons; we may possibly get 8 *d.*

3536. *Chairman.*] Do you use cannel coal or ordinary coal?—It is chiefly cannel; but, in consequence of the great difficulty we have in obtaining cannel, we have latterly been obliged to use a certain quantity of coal; practically, they profess to make the gas of cannel.

3537. Mr. *Woods.*] Where do you get coal from when you do not get cannel?—I think chiefly from Wigan.

3538. I mean the other coal?—I think we get it from your neighbours, when we cannot get cannel.

3539. Do you wish the Committee to understand that there is coal in the Wigan coal-field which will make good gas, besides the cannel coal?—Yes, I believe so.

3540. It makes Manchester gas?—Yes; we are obliged to use coal, and I think it comes chiefly from that district; I do not think we get it from any other.

3541. Is it the fact that if coal is mixed with the cannel, the gas is still of the quality which is represented?—I do not know what the quality has been; I have the last report that was presented, showing what the illuminating power of the gas was.

3542. Mr. *Lusk.*] What is it?—This is the last report from the chemist who is regularly employed: "I have the honour to report that the average illuminating power of the gas during the past year has been equal to 21·28 sperm candles, consuming at the rate of 120 grains per hour against five cubic feet of gas, deduced from daily photometric observations made at my residence in John-street, and at the Rochdale-road gas station; during some periods the gas has been almost entirely free from sulphuretted hydrogen, the quantity in no instance exceeding a small fraction of a grain in 1,000 cubic feet of gas, and there has been no sensible indication of its presence in the daily observations, except in very rare instances; the gas has also been free from tarry matter and naphthaline; the ammonia in the gas has been very small in amount, being often below three grains in 1,000 feet; it has averaged not more than five or six grains; the gas has been very clean and very pure, and is, I believe, not surpassed in this respect by any gas in the kingdom."

3543. Mr. *Webster.*] There has been a reduction of price, I suppose, since the Corporation took the works?—Yes, several reductions; and I may state that the accounts show that this reduction has been followed by a very large increase in the consumption, so that our gross surplus profits have scarcely been at all diminished, although the reduction in some instances has amounted to, I think, 11,000 *l.* or 12,000 *l.* per annum.

3544. You told the Committee that the Corporation supplied some outlying districts; to what distance do you supply them from the town of Manchester or from the gas works?—We go out five or six miles in some directions and less in others; on the one side of Manchester there is the Corporation of Salford only divided from us by the river; and there, of course, the Corporation of Salford supply the gas.

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3545. I suppose the population of that whole district is very dense?—It is. I said that with one interval our surplus profit had been applied solely in improvements; I should like to explain that, in order to prevent misconception.

3546. *Chairman.*] It is in accordance with the Act?—Yes, except as altered; there was a certain period during which a portion of the profits were otherwise applied.

Cross-examined by Mr. *Burke.*

3547. The report you have read is from your own chemist?—It is.

3548. So that little observation at the end of it is not very unnatural; are you under any sort of supervision or control?—No.

3549. None whatever?—None whatever.

3550. It is a report of your own officer to his employers, giving a very flattering account of the purity of the gas. Is there any account given of the amount of sulphur, as well as of sulphuretted hydrogen?—I cannot profess to give you any information as to that. All I know is, in fact, from the report which we have just read.

3551. The report does not contain a single word as to the amount of sulphur which is found in the gas?—No. I have read the whole of the report.

3552. As regards price, can you give me the proportion of the area that you light at 3*s.* 2*d.*, as compared with the area that you light at 3*s.* 8*d.*?—I have not the proportion.

3553. You told my friend that, in these outlying districts, the areas were very densely populated?—They are populous in the neighbourhood of Manchester.

3554. At Manchester, and in these outlying districts, the supply of gas may be considered to be very concentrated; there are large manufactories and so on?—No doubt.

3555. And, of course, where the supply is concentrated, gas may be supplied cheaper than where it is scattered?—Of course there is less difficulty in distributing it. It is better to have a few large consumers than many small ones.

3556. The area is very large that you supply at the increased charge?—No doubt the area is very large, but I am not able to give the proportion of the rates.

3557. You do not lay out any money in improvements beyond the limits of the Corporation?—Not a farthing.

3558. So that you charge an increased price outside the limits of Manchester, and apply the profits arising from that increased price to the benefit of the area within the Corporation?—Certainly

3559. Are you acquainted with Liverpool?—Yes.

3560. Liverpool is under a company?—It is.

3561. What is their price?—I do not know, but I can state this fact, that I believe Liverpool has always been a sort of bugbear put before us by the gas-payers of Manchester, and I believe the price in Liverpool is lower than the price charged in Manchester; the difference between Liverpool and Manchester being that any profit that is obtained in Manchester is expended for the benefit of the whole of the inhabitants, to whom the works belong, while the profit, as obtained in Liverpool, of course goes into the hands of the private owners of the works.

3562. Is it a fact, within your own knowledge, that Liverpool is supplied by a company, and not by the Corporation, and that gas is cheaper there than in Manchester?—The price is a little lower than in Manchester.

3563. At Manchester, was there ever a company for supplying gas?—No.

3564. There never has been?—Practically, I may say there was never a company. There was an individual who established some very small works, but they were never in practical operation for Chorlton-upon-Medlock, which is one of the townships included. The fact is, that, when the works were transferred to the Corporation, the power which had been obtained for making gas for Chorlton, but which had never been carried out, was transferred by the Commissioners of Chorlton to the Corporation; therefore, the power which had existed

existed on the part of the Commissioners for Chorlton to establish gas works, if they pleased, for that township, no longer existed.

3565. I asked you whether there was a private company?—Perhaps I did not make myself sufficiently clear. The individual who originally got power to establish these works transferred it to the Commissioners of Chorlton.

3566. For money?—No doubt it was for money, but at that time the works had not been actually brought into operation.

3567. I believe the Corporation of Manchester supply the town with water as well as with gas?—Yes.

3568. Was there a water company before?—Certainly there was.

3569. Did they buy up the water company?—Of course.

3570. You have never heard in your experience, have you, of such a thing as a Corporation obtaining Parliamentary powers to compete in the supply of gas or water with an existing company?—I could not mention any such fact; I should think it very inconvenient to have that conflicting interest.

3571. Do you think it consistent with common justice that a Corporation at the expense and risk of the ratepayers should come forward to compete with a private company established by Act of Parliament?—I can state what we did; when we applied to Parliament to establish the works, we had a very insufficient and unsatisfactory supply of water; we certainly did not think of applying to Parliament to get power to compete with the company, but we made arrangements for the purchase of their works, and we paid most extravagantly for them; we bought the works, so as not to have any opposition on the part of the existing waterworks company, and then obtained the power to get a better supply.

3572. In Liverpool it is the same; there the Corporation sought to supply the water, and Parliament imposed upon the Corporation the obligation first of all to buy up the interests of the water companies at a fair compensation?—I believe that was so.

3573. As a gentleman of great practical experience, can you give me a single instance within your knowledge where Parliament has adopted any other course?—I really cannot. I should like to explain, in order that my evidence may not be apparently inaccurate. There was an arrangement made for ten years, the nature of which I may shortly state. About 1851, when we established the waterworks, the expenditure was about 1,200,000 *l.* Of course the annual amount that had to be provided was very large. We supply water rather upon a different system in Manchester from the system on which it is supplied elsewhere, as we have the power to make a compulsory rate for domestic supply, We make that compulsory rate and make every householder pay; he may take the water or not, as he pleases, but if it goes past his door we make every householder pay the domestic rate; that rate is made of such an amount as is necessary to raise the balance of our expenditure in the year beyond the receipts for the quarter for trading purposes or any other purposes without the limits of the city where the compulsory rate does not apply; if, for instance, our expenditure was 100,000 *l.* in a year, and we received 50,000 *l.* from other sources, we should have to make a domestic rate and a public rate (because we have power also to make a public rate which extends over all property in the city) to make up 50,000 *l.* to meet our expenses. In 1851, in consequence of this very heavy charge, the question arose with the Corporation, what would be the most useful application of the gas profits, and they determined, and very wisely too, that the greatest improvement that could be obtained for the city of Manchester was a large and unlimited supply of good water; they, therefore, obtained power from Parliament to apply for ten years, if the Corporation thought fit, one moiety of the surplus gas profits which, under the existing Acts of Parliament, ought to have been expended in carrying out improvements in reduction of the expense incurred in obtaining water, and during those 10 years one half of the surplus profits was regularly paid over to the waterworks account, and, as the Committee will see, it did in fact to that extent lessen the compulsory rates which otherwise we should have been obliged to make.

3574. Mr. Serjeant *Kinglake.*] You obtained an Act for that?—Yes. Sir James Graham was Chairman of the Committee from which we got that power, and, when it was obtained, he said it was a most admirable arrangement for the Corporation to make.

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3575. Mr. *Burke.*] Of course you charge for the water as low a rate as you can?—We make the rate as low as we can.

3576. You do not apply any surplus profits derived from water to the local improvements?—We cannot have any, because our power to raise the rates is limited to the amount of our deficiency. There is no power to obtain any profit by the water supply.

3577. On the other hand, the consumers of gas pay towards local improvements in proportion to their consumption of gas?—In one sense they do; but the mode in which you apply the surplus profits does not affect at all the price of gas; the same profits would have been made, whether they were expended one half in carrying out the improvements, one half in reduction of the water-works expenses, or whether the whole had been expended in improvements; it does not affect the price of the gas in the slightest degree.

3578. I only want to have the fact, and it is this; that, instead of rating every inhabitant in the ordinary mode of rating for local improvements, the large gas consumer is the man who pays the great bulk of all the local improvements: it depends upon the consumption of gas how much he will have to pay towards the local improvements?—There is no doubt that is the result, though the large gas consumer would have paid just the same if there had not been one sixpence of the money expended for water.

3579. Do you borrow your money upon the security of your gas rates, or the security of the works?—Technically, upon the security of the works; but, practically, it is the security of the Corporation.

3580. What do you charge for the public lights?—The public lamps within the city are charged at the rate of 25 *s.* per annum for gas alone; they are lighted, on an average, 3,642 hours per annum; the lamps are supplied with No. 2 union jets, which will consume at one-inch pressure about two and three-quarters or three cubic feet per hour. It is not supposed, or intended, that any profit should be made by the supply of gas to public lamps within the city; they charge what they believe to be the cost price of the gas.

3581. *Chairman.*] Do you know what the price of lamps is outside the city?—I do not know.

3582. Mr. *Burke.*] Do you supply the public lights outside the city?—We do, no doubt.

3583. Can you give the rate?—I cannot.

3584. You are making a large profit from the sale of gas to the private consumer, and you are selling to the public consumer at cost price?—Yes.

3585. Then must not the necessary result be, if you do that within the township of Manchester, where the outsiders are not benefited, you are making these people pay 3*s.* 8*d.* in order that you may have a low charge for your public lights in Manchester?—No, I do not think that is so at all; it seems to me perfectly just that the gas lights of the township or of the city, which in fact are paid for out of rates, should be charged only the cost price of the gas; if you charge them more, the effect would simply be that you would increase to that extent the surplus profits that would be applicable for improvements, and you would increase at the same time to that extent the local township rates, because we have township rates for lighting, and the lamps are provided by the committee out of the township rates.

3586. *Chairman.*] You mean the posts and pillars?—Yes.

3587. Mr. *Woods.*] Do you mean that the lamp-posts do not belong to the Gas Committee?—The Corporation represent the whole, but they do not belong to the Gas Committee; I do not think the lamp-posts are paid for out of the gas revenues or moneys.

3588. Mr. *Burke.*] You supply the public lamps without any profit at all?—Exactly.

3589. And you supply the gas to the private consumer at a large profit?—The profit of course appears from the result.

3590. Suppose a gentleman lives outside the boundaries of Manchester, having a very large manufactory; you charge him a very large sum of money for the consumption of his gas, 3*s.* 8 *d.* per thousand feet, he deriving no benefit at all from the public lamps within the city of Manchester?—I do not admit that we charge him a large sum; the fact is, that we charge him 6 *d.* per thousand feet more than we charge the inhabitants of Manchester, who own the works, and are therefore interested, and have a right to be supplied upon better

better terms than others; at the same time, when we get beyond the limits of the city, parties have the opportunity, if they like, of obtaining a private supply of gas for themselves. We have known many instances where they have had gas works of their own, and they have given up those gas works, although the plant was all there, to take the gas from the Corporation at the price offered; that, I think, is a conclusive proof that it is not a very extravagant price.

3591. I will admit that a gentleman may pay for gas made by himself even more than 3 *s.* 8 *d.*, but if they were all on an equality why should you charge a man outside the borough 3 *s.* 8 *d.*, when you only charge 3 *s.* 2 *d.* within the borough?—Simply upon this ground; the Corporation might, if they pleased, but I think it would be very unwise, determine to supply gas to the inhabitants at cost price. The gas consumers have sometimes agitated to get the price down to an amount which was thought to be most unreasonable, because the gas consumers do not represent the whole of the inhabitants, but the whole of the inhabitants represent the gas works; therefore we consider that we have a right to charge a fair and reasonable price for gas. We ought to supply it as cheaply as the public could possibly hope to obtain it if there was unlimited competition within the district, but not at a lower price; they should have it at a fair market price, and the Corporation think that where they go beyond the limits of the city, and where, of course, the expense of distribution is increased, and where there is no ownership or interest in the works, it is only reasonable to charge that 6 *d.* extra. There has always been a distinction between the district outside the city and the district within it.

3592. Then, practically, outside the borough of Manchester you are a gas company?—Yes.

3593. Making a profit at the expense of the consumer?—No doubt; we are the same in the city.

3594. Do you know that in London there is no company, however far they may carry their pipes, making a differential charge; the Imperial, for instance, which lights all over St. John's Wood?—I do not know.

3595. Over what period is this million of money that has been expended spread?—It is over a considerable period; before 1838; I think about 1825.

3596. Am I right in stating, that during a great portion of the time, when you were deriving large profits applicable to improvements, you were charging 14*s.* per 1,000?—Not during a great portion of the time; I dare say we began with that price.

3597. In 1825, I believe the price was 14 *s.*; in 1826, 27 *s.* and 28 *s.*, also 14 *s.*?—I can go back as far as 1843, and state what the price was then, and what reduction has been made since that time.

3598. What was it in 1843?—7 *s.*; the first year that the Corporation had the gas works the price was reduced from 7 *s.* to 6 *s.*; the next reduction took place in 1848, to 5*s.* per 1,000 feet, at which it remained until 1860, when it was reduced to 4 *s.* 6 *d.*; in 1861, it was reduced to 4 *s.* 6 *d.* and 4 *s.*; in 1863, to 4 *s.* and 3 *s.* 9 *d.*; in 1864, to 3 *s.* 9 *d.* and 3 *s.* 6 *d.*; in 1865, to 3 *s.* 6 *d.*; and 3 *s.* 2 *d.* the second half year.

3599. Let me ask you whether, at that period of 1860, when you reduced, you were not in excess of Liverpool, where the people were supplied by the company?—I have already stated, and I believe there is no doubt about the fact, that Liverpool has generally been charging rather lower than the price in Manchester.

Re-examined by Mr. *Webster.*

3600. With reference to the extra charge outside the district, is that more than a fair allowance for the additional expense connected with it?—No, and the other circumstances.

3601. Does the consumer outside the district come under the same classification as the consumer within the borough?—He pays 6 *d.* extra.

3602. Is there no discount to him?—I believe not.

3603. With regard to the lamp-posts, I presume they are the property of the particular district in which they are situated?—Of the township in which they are situated.

3604. And I suppose the lighting will be borne by that district?—Yes; the expense of lighting each township is paid for out of the township lighting rate.

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3605. Is that the case with the townships in the outlying districts?—I can hardly tell you the arrangements outside the city; I am speaking of the townships within the city; we have five townships within the city, and there the lighting is paid for out of the township rates.

3606. *Chairman.*] The out-townships may take gas from the Manchester Corporation if they like; if they can get it better or cheaper elsewhere, they are open to do so?—Certainly.

3607. There is nothing to control them; they take it at their own option?—Yes, and there are gas works established in one district very near us.

3608. Mr. *Webster.*] The lamp-posts are the property of the district?—Yes.

3609. Mr. Alderman *Lusk.*] You say that the price is 3 *s.* 2 *d.* and 3 *s.* 1 *d.*?—Yes.

3610. And you give a light equal to 21 candles?—Yes,

3611. Do you find these works to work well in Manchester?—We have found them of the greatest possible advantage, because we have carried out very important improvements by means of them,

3612. I suppose you look upon light as we do here, pretty much as a necessity?—We regard it very much as we regard water, and I think it is obvious that there is an advantage in keeping the interference with the streets as far as practicable in the hands of one body, and in the hands of the local authorities.

3613. Having had so much experience, and knowing, as you do, the wants of a large community, do you think that, all things considered, you get the very best gas at the price you have mentioned, and that the arrangement works well for the public?—We believe it works very well indeed; I have no doubt about the fact; I believe no gas works are working more satisfactorily than those that the Corporation possess.

3614. Do you think, considering light as a necessity, something like air, that it is desirable that a company should have the power to supply it to the community, or that the supply should be in the hands of the community themselves?—I quite agree in the recommendations made by the first Health of Towns Commission, and we have carried out that recommendation in Manchester. In that first report of the Health of Towns Commission they recommended that the supply of water and gas, for the reasons which they there set forth, should be in the hands of the local authorities; but I think, at the same time, where the local authorities have not done that, the district must be thankful to a company that comes forward and does that which the authorities, perhaps in the first instance, ought to have done themselves

3615. With regard to the water supply, has it been better since you have had it in your own hands, or when you had water from a company?—Practically, we had no supply when we were in the hands of the company, but we were in a most wretched and miserable condition. We should, in all probability, have been without water if no alteration had been made; now we have, I may say, as fine a supply of water as any district in the kingdom.

3616. When you were in the hands of the company you were in a miserable condition, and now you are in a good condition?—Certainly.

3617. Therefore may we infer that you think a community would do better to supply their own gas in the same way?—I can only answer the question to a certain extent and in a qualified way. As I said before, I think a corporation or a district would be wise always to take steps to supply that district with gas as well as water; but, of course, gas is absolutely necessary, and if a company has been allowed to come into the district and supply it with gas, they must deal with the existing circumstances and with the company, when it is proposed to alter the system.

3618. Looking at it from an economical point of view, and perhaps in a broad view, do you think that the inducements to a company to adopt all the new improvements and new inventions of science are as great as they would be to a community itself?—I think, in the case of gas, they are, and for this reason: it cannot, I think, be disputed that gas manufacturing is a very profitable business, and that limited as the gas companies are to a certain per centage of profit, they can very well afford to take advantage of every new improvement that is suggested; they have no difficulty whatever, if they have a tolerably satisfactory district, in realizing the maximum profit that Parliament allows, and I do not think that there is anything in the expense which would induce them

them not to take advantage of every improvement that may be suggested, especially if there be anything like competition.

3619. What I mean is this: is the inducement as great as in the case of a company which can get a dividend without any extra trouble, as it would be to a community where they get all the profit themselves?—We are in pretty much the same situation as a company; while we have no limit to our profits by Act of Parliament, we are limited by the influence which the ratepayers of course possess, generally over the authorities, and we, practically, without having any statutory limit, are bound not to make a larger profit than 10 per cent., which is what Parliament would allow to all companies upon the capital which is shown by the account to be employed in the manufacture of gas; the moment our profits get up, either by any improvement or by increased consumption, our price must go down, or at once we should have an agitation to compel us.

3620. Mr. *Woods.*] It is the reasonable judgment of the proprietors which limits the rate charged for the gas?—Yes.

3621. Mr. *Lusk.*] Where the company can easily get their 10 per cent., do you think that there is an inducement to them to endeavour to supply gas at a cheap rate to the same extent as when you have the public outside, who will come down upon you if you do not; that is, have they an interest the same as your commissioners to supply gas at a cheap rate?—Well, I do not know that they would have as strong an interest if they were possessed of a monopoly, but then they would always have the possible fear or apprehension that there might be some interference if they were not to deal fairly with the district.

3622. Where they have a monopoly, nothing can touch them but an Act of Parliament; there is no control in any way whatever?—Of course, if there is an absolute monopoly, and no control, they might charge 10 *s.* per thousand cubic feet.

3623. But there is always a certain control, although it may not be direct?—There must necessarily be a certain control on the part of those who have to take the gas, because they know what gas can be provided at, and they know what quality they have a right to expect.

3624. Mr. *Lusk.*] Can you give any reason why the public should be compelled to take gas from any company in this free country?—I do not think they ought to be compelled to take it from any company, but sometimes it is a necessity; they want gas, and they can only obtain it from the company which may be in existence, and which offers to supply it; and I do not see how it is possible to deal with the state of things otherwise than with reference to the existence of such a company.

3625. Why should Parliament compel a community to take gas from a particular company?—I do not think Parliament ought to do so, and I should hardly think that Parliament has done it; I am not aware of any case in which Parliament has done anything of the kind. Parliament gives power to a company to supply gas to a certain district; the Corporation, or anybody else, proposes to have power also to supply gas, and then it becomes a question for Parliament whether they will have two bodies supplying it or not, and upon what terms.

3626. Mr. Serjeant *Kinglake.*] That is, whether you should have a monopoly, subject to restrictions, or an open trade in gas?—Yes; and whether the power to open the streets shall be given to more than one body, so as to cause the greatest amount of inconvenience to the public.

3627. Mr. *Woods.*] You have been asked about the price of gas for the outlying districts; will you tell me whether the outlying districts are responsible for the mortgage debt upon the town of Manchester?—No, certainly, they have no responsibility.

3628. The outlying districts have no responsibility of any kind?—No.

3629. Are they responsible for staff salaries?—They have no responsibility of any kind; if our works were to be blown up to-morrow by some unfortunate accident, it would be Manchester that would have to find the money.

3630. Then a differential charge of 6 *d.* is put on, with the idea of meeting that non-responsibility of the outlying district?—To a certain extent.

3631. You have said that the pillars and lamps belong to the parish which is lighted, and chargeable to a separate fund compared with the gas works?—Yes.

3632. May I ask you whether the maintenance and cleaning of these lamps

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is chargeable to a separate fund also?—I believe it is, because it is connected with the lighting.

3633. Does the possession of the lamps and pillars, on the part of the parish which is to pay for the consumption of the gas, give the parish a great practical control over the amount of light and the quantity of gas consumed by those lamps?—I do not think it does, practically; because there is an arrangement with the Gas Committee, both as to the nature of the burner that is to be supplied and the number of hours during which the gas is to be consumed, and the number of places; they pay so much for each place; it does not matter how many posts there are, because the price is fixed, and that price includes the nature of the burner, and the number of hours during which the gas is to be burning; so that, practically, the Gas Committee settle that in fixing what will be the probable net cost of the gas to be consumed.

3634. Is the gas supplied to the out-townships as good as that within the borough?—It is precisely the same.

3635. Mr. *Woods.*] Have you ever considered the question whether there should be two standards of illuminating power in Manchester?—No.

3636. Has it ever been proposed to have a lower standard for the low districts?—Never.

3637. For the poor quarters of the town?—Certainly not.

3638. Why not?—It never has been mooted certainly; and I think it should be the rich quarters rather than the poor which should have the low standard, because it would cost more money. The better the quality of your gas the cheaper it really is. I know in London that has been found out in a most remarkable degree.

3639. You say that the better the quality the cheaper the gas?—Yes; I know an instance of an Honourable Member of this House who told me that he made an arrangement to have in Birdcage-walk a very superior quality of gas, that was supplied, as I understood, for Buckingham Palace, and to his astonishment, although he paid 7 *s.* 6 *d.* per 1,000 feet, instead of about half that sum, he found that his gas bill had diminished.

3640. Mr. *Morrison.*] Can you compare your expenditure at Manchester in the matter of salaries, pensions, and wages, with that of the gas companies?—I cannot compare it; I can give you the exact amount of our expenditure; I can say this much, that I believe the expenditure of gas companies is upon a more liberal scale than the expenditure of Corporations; the salaries are decidedly higher.

3641. *Chairman.*] In private companies?—Yes.

3642. Are you speaking of London?—I believe, in London, Liverpool, and elsewhere; I am now only speaking of the higher salaries, the managers for instance; I know that in our case they are small, and they are thought to be small as compared with the salaries paid by the companies.

3643. Mr. *Morrison.*] When a private company has reached its limits of 10 per cent., it has no inducement to economise?—They can afford to give good salaries.

3644. You have no figures on the subject, but that is your impression?—I have no doubt of the accuracy of what I have stated.

3645. Mr. *Hartley.*] You see the map before us which represents 13 companies in London?—Yes.

3646. To assimilate the state of affairs in London to that in Manchester, all these companies would have to be formed into one?—Yes, and so they ought to be, as it is proposed to do with water.

3647. You would not recommend another little company to be stuck down in the centre of them?—We should not attempt to do that in Manchester.

3648. You carry on all your business with borrowed money, at something like four per cent.?—Yes.

3649. Therefore the Corporation has the advantage of the difference between four per cent. and 10 per cent., leaving six per cent. profit?—Certainly, because a private company makes 10 per cent. upon its capital.

3650. Therefore you have six per cent. to apply to improvements?—That is so.

3651. Mr. Serjeant *Kinglake.*] Would you recommend one company to supply three millions of inhabitants?—It would be a very large undertaking, but I do not see that it would be an impossibility, any more than a supply of water.

3652. Mr.

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3652. Mr. *Lusk.*] Do you think that these thirteen companies should deal with three millions of people just as they please in this free land?—Certainly not; I do not know what the statutory provisions in these Acts of Parliament are, but Parliament generally puts rather stringent provisions in Gas Acts.

3653. You mean that if London had the spirit of Manchester, it would buy up all these companies and condense them into one, and deal with water on the like principle?—I do not see how it is possible that you could deal with them, except upon the principle of arranging with existing interests.

3654. You mean buying up the principal sums?—Yes, that is what we did in Manchester with reference to water.

3655. Mr. *Woods.*] You stated that sometimes coal was used; I apprehend you would not think of producing a lower quality of gas than the present standard at Manchester, if it could by any possibility be avoided?—No; the standard has been reduced from the positive necessity of using a considerable quantity of coal; the standard was always for years above 22 candles, and now it is about 21 candles; it has been reduced slightly from the fact that we have been obliged to use a portion of coal, not being able to get all the cannel we required.

3656. But you would not consent voluntarily to have a lower standard?—Having two standards would never be thought of; in fact, it would be an impracticability; it would require almost two systems of distribution.

3657. Are you aware that there are two standards contemplated by the Act of 1860, which we are inquiring into?—I am not aware of it.

3658. Mr. *Lusk.*] After making your gas of a good quality, at 3*s.* 1*d.*, you have a large profit, notwithstanding you supply the public at that price?—Yes, we have 30,000*l.* a year, and that is after paying one-twentieth off the mortgage debt, amounting to 18,000*l.* or 19,000*l.*, and also paying a large sum for the sinking fund, which, in my opinion, is quite unnecessary; I think we ought to have paid a much less sum, and have had much more to expend annually in improvements, because if it were not that we are obliged to extend the works to keep up with the increased demand, we should have our works without debt, and then the interest would cease and the liquidation would cease, and there would be a large sum of 60,000*l.* or 70,000*l.* a year or more, to be applied for improvements.

3659. If you got 4*s.* 6*d.* a thousand for your gas, you would make an enormous deal of money in Manchester?—A great deal more than we do now, and we should very soon have the ratepayers sitting upon the Corporation.

Mr. *John Lancaster*, called in; and Examined by Mr. *Hoggins.*

Mr. *J. Lancaster.*

3660. ARE you and have you been about two years Chairman of the Lancashire and Cheshire coal trade?—Yes.

3661. Are you chairman of some company in the north?—Yes.

3662. What is it?—The Wigan Coal Mining Company.

3663. Are you a fellow of any society?—Yes, the Geological Society.

3664. Has your company any large undeveloped field of cannel coal?—Yes.

3665. Will you describe its whereabouts and describe its extent?—The company of which I am chairman has a large cannel field open, at present estimated to contain 13,000,000 tons; we have a large field also unopened, unproved; I am also connected with a cannel field in North Wales, partly working and partly developing.

3666. Is your company ready to enter into a contract for a supply of cannel coal?—Yes.

3667. To what extent?—300,000 tons a year.

3668. *Chairman.*] Do you mean in London?—Anywhere.

3669. Wherever it is demanded?—Yes.

3670. Mr. *Hoggins.*] There are still very large fields of coal to be developed in Lancashire and other places?—Yes, very large.

3671. Where cannel coal may be found, independently of what you have mentioned?—Yes, large fields.

3672. What is your opinion as to the price at which cannel coal could be delivered to the London gas companies?—It is now delivered at about 23*s.* a ton in London.

3673. *Chairman.*] You could deliver it?—It is delivered at present.

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3674. From your field?—Yes; that is where the works are favourably situated for railway carriage.

3675. Mr. *Hoggins*.] What is the illuminating power?—It varies to some extent. We supply the Liverpool gas works in a great measure, and I believe they profess to give 23-candle gas. We supply Manchester largely, and there, as you have heard from the town clerk, they give 21-candle gas.

3676. Are bituminous shale and cannel found in North Wales and in Lancashire?—In North Wales and in Scotland there is a large development going on of that class of materials.

3677. And in Northumberland also?—Yes.

Cross-examined by Mr. *Burke*.

3678. The more cannel there is consumed, the better for the chairman of the Cannel Coal Company?—Yes, I think so.

3679. And if the standard of illuminating power were put in London and elsewhere at a very high figure, it would involve the necessity of using cannel coal?—Yes.

3680. And the only cannel coal fields are in Wigan, Lancashire, and North Wales?—There are far more cannel fields than those. There is a cannel field at Newcastle-upon-Tyne or near there, and there are cannel fields all throughout Scotland, and in Wales.

3681. Do you know whether the cannel coal is brought to London for gas purposes from Scotland, or from anywhere else than from Wigan and North Wales?—I see from the public reports that cannel comes from Scotland and from Newcastle-upon-Tyne to London.

3682. Can you tell me any company that has burned that Scotch cannel coal?—I cannot tell you; it comes to London for gas purposes.

3683. Is it not the fact that you from Wigan supply all the cannel coal that is used for gas purposes in London?—I suppose that is because we send it cheaper.

3684. That is the field from which they get the cannel coal, is it not?—They get it from North Wales as well.

3685. Is it or is it not within your knowledge that they find it far more profitable to manufacture cannel coal into petroleum oil than to sell it for gas purposes?—That has been the case for the last year or two, but I think that will very soon cure itself.

3686. The manufacture of petroleum is a modern discovery?—Yes.

3687. And within the last year or two, at all events, speaking practically, without reference to your views of the future, the companies have found it more profitable to manufacture coal into petroleum oil than to sell it for gas purposes?—That refers only to a particular class of coal that is more approaching the shale.

3688. Do you not know that the price of cannel coal in consequence has been rising in the market?—We have not found it very much higher than it was five or six years ago.

3689. Have you found it higher?—It was a little higher last year.

3690. Did you hear Mr. Heron, the town clerk of Manchester, say that they could not get sufficient cannel coal at Manchester now?—I heard him state that, but he did not push it home, and say that it was neglect on the part of the managers of the gas works themselves.

3691. Then you think that the Corporation do not manage the gas works well?—I will mention a circumstance on that point. They made great alterations last winter, and owing to these alterations they did not get in their usual stores for the winter, and the demand at the particular season was so great, owing to their want of stock, that there was not rolling stock to carry it.

3692. *Chairman*.] You mean to say that the coal could have been found, but there was no means of transport?—For the moment there was no means of transport; that was our own case.

3693. Mr. *Burke*.] The cannel coal field is limited in its area as compared with the common coal field; you will admit that?—Yes.

3694. And if the gas companies were all compelled to burn cannel coal, they must get that cannel coal from a limited area in comparison with an extended area from which they might get common coal?—They do not make gas from common coal.

3695. Will

3695. Will you answer my question; supposing the gas companies are compelled to use cannel coal in order to give a high illuminating power they will be then confined to a comparatively narrow coal field instead of a very extended one?—Not a narrow coal field; it is not fair to put it in that way; it is not a narrow field.

3696. Narrow as compared with the larger one?—If you compare it to the whole coal field of Great Britain, it is narrow in comparison with that.

3697. So that in the one case they have a large area for competition, and can get their coal cheap, while in the other case, having a comparatively limited area, the competition would be less?—Well, the gas coal at present is drawn from certain bituminous seams of either coal or cannel, and if you compare those bituminous seams that are used then the comparison is not a restricted one.

3698. You think not?—No.

3699. Did the coal-owners ever combine together with regard to the price of coal?—Not in our district; they used to do so in the Newcastle district.

3700. Supposing the companies were compelled to burn cannel coal from the Wigan coal field, how long do you think it would be before you would send up the price among you?—Wigan would not be the place at all.

3701. You think not?—No; it would only send a portion.

3702. You supply the only cannel coal, I think, used in London at this moment?—No; certainly not.

3703. I do not mean you individually, but the Wigan coal field?—I believe a part comes from North Wales.

3704. You exclusively supply the Western Gas Company?—Not exclusively.

3705. Where else do they get their coals from?—From the Wigan district.

3706. Is it not the fact that the Western Gas Company, the only cannel gas company in London, get the whole of their cannel coal from the Wigan coal field?—I cannot say that.

3707. They are customers of yours?—Yes.

3708. Your coal gives 23-candle gas?—Yes.

3709. So that, I dare say, you would assume that the Western Gas Company are supplying London with 23-candle gas?—I know nothing of their affairs.

3710. You say that you are preparing to enter into a contract to supply 300,000 tons per annum?—Yes.

3711. At what price?—We could deliver it at the present price of 23 *s.*, but I put it that you will probably have an increased demand springing up, and if so, there will be an increase of price; and I should say 25 *s.* a ton as a maximum.

3712. That is a good lift?—I am assuming that you have a sudden demand.

3713. And the larger the demand, the higher the price would be, I suppose?—The effect would be, that if the price went up 2 *s.*, you would then develope a very large unopened coal field.

3714. However, in view of an increased demand, you would send up the price 2 *s.*?—That would soon cure itself.

3715. That is your suggestion, is it not?—We should get the highest price we could.

3716. For how many years would you enter into a contract?—I may say I am not in favour of entering into long contracts.

3717. When did you first begin to supply the Western Gas Company; in 1863?—I think it was in 1862 or 1863.

3718. What did you charge them then?—I think about 21 *s.*

3719. And now you charge them 23 *s.*?—I think about 23 *s.*

Re-examined by Mr. *Webster.*

3720. Do you think that if coal went up 2 *s.* a ton, you would probably bring a large quantity from Scotland into the market?—No doubt.

3721. Was the Scotch field one of the fields to which you were referring when you said that an additional 2 *s.* would open up a very large field?—Yes.

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3722. What other fields were in your mind?—In our own district they would go deeper and develope large fields of it.

3723. I do not apprehend that you are under any very great alarm about the cannel being burned out?—Certainly not.

3724. I suppose Scotland by railway would be double the distance of Wigan?—It would come by sea, I think.

3725. The Wigan coal comes by rail, I suppose?—By rail.

3726. You told us that some of this coal approached the shale; is that what they call boghead?—The boghead is approaching the shale.

3727. That is the material about which there has been a contest, whether it is coal or shale?—Yes.

3728. Is that the class of material from which they make petroleum principally?—Yes.

3729. What is the coal in Wales that they make petroleum from?—From what they call the curly cannel.

3730. I believe doctors differ (whether my friend Mr. Burke does or not) as to what is the proper name of the coal from which they make petroleum, whether it is coal or shale?—There is a difference of opinion.

3731. I suppose you do not care very much what it is called; you know there is a great quantity of it?—All those articles come under the category of coal.

3732. *Chairman.*] Does cannel coal go abroad from Wigan?—Generally.

3733. And to all parts of the world?—Yes.

3734. For gas purposes?—Yes, to Russia and various other places; Paris is being partially supplied with it.

3735. You have no idea that it will be exhausted in three generations?—Certainly not.

3736. Mr. *Hartley.*] You say you have a coal field opened out, containing about 3,000,000 tons?—Yes, of this particular coal.

3737. How many years' consumption is that for the London Gas Works?—I believe the greatest consumption in London is 900,000 tons.

3738. Mr. *Woods.*] There are other mines in the Wigan coal field, nearly as rich in quality, I believe, as the cannel coal?—No, not quite so rich; but they are rich in bituminous matter.

3739. Does the Holly Mine coal make good gas?—Yes; 15-candle gas.

3740. Does that extend over the whole of the Wigan coal field?—Over a very large portion of the Lancashire coal field.

3741. It is fair to presume, I apprehend, that if that were mixed with cannel, it would produce a medium quality, between the extreme of Manchester and 15 candles?—Yes, it is so; we send a large quantity to New York to be mixed.

3742. And, of course, it produces a quality of gas with an illuminating power somewhere between 15 and 22 candles?—Yes.

3743. At any rate there is an inexhaustible supply of that mine?—Yes.

3744. There are many other mines less rich than that?—Yes.

3745. And approaching it in quality?—Yes.

3746. You were asked about the Western Gas Company producing 23-candle gas from this Wigan cannel; can you say that the Western Gas Company's gas is not mixed with any other coal?—I do not know anything of their manufacture.

3747. The cannel from the Wigan coal field, I apprehend, goes in all directions over England?—Yes.

3748. Have you heard of Cambridge being supplied with Wigan cannel?—No, I have never heard of Cambridge being supplied with cannel; I have heard of Cambridge being supplied with coal.

3749. If it goes in all directions, if the London people were desirous to have it, perhaps it would divide its attractions between other places in England and London?—There is this sort of practice with regard to cannel; in the winter time when they are pushed for gas, they will send for a small quantity of cannel to veneer over the low illuminating power of the coal.

3750. To raise the power?—Yes; in the dark and gloomy weather, they use a little cannel to improve it.

3751. Mr. *Woods.*] Who does this?—It is very general; I will give you a

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case in Birmingham; I think they have there about 1,000 tons as against probably 100,000 tons annually; they have that in the winter months.

3752. That is 1 in 100?—Yes.

3753. Is there a very large foreign export of cannel coal?—Yes.

3754. I apprehend there is a considerable foreign export which would be available for London, if London required it?—We send abroad 100,000 tons a year, which, if somebody would give us a shilling more we should keep at home.

3755. Mr. *Hartley.*] You do not think we are going to work it all up in three generations?—No; give us 2*s.* or 3*s.* a ton more, and we will soon develope you some more coal.

3756. Mr. *Morrison.*] If it is all worked out in three generations, it will be the same thing to the Western Gas Company as to all Corporation Gas Companies, they will not be able to get it any more than the others?—Certainly not, if it is all used.

Mr. *Webster* stated that in Mr. Mellor's evidence at Question 3131, the figures 50,608,000 should be 15,608,000, and that at Question 3136 the figures 12,085 should be 1,285.

Mr. *Samuel Hughes*, called in; and Examined by Mr. *Webster*.

Mr. *S. Hughes.*

3757. You handed in yesterday at the close of the day a table showing the consumption and various details with regard to the various companies for four years?—I did.

3758. With regard to the return of the Independent in 1863, do you wish to make any correction?—There is an error in one line with regard to the Independent in 1863; the per centage on the share capital is shown in the printed account to be 29·16; that is an error; the real per centage on the capital should be 16·85; the error is made by including in the profit the balance brought forward from last year; that account contains the balance in a different way from most of the other accounts; it occurs mixed up with other items, and unfortunately it was not excluded; of course the general average will be altered.

3759. To what extent?—I have not worked it out.

3760. Not very largely?—No, because it is only one year out of four.

3761. *Chairman.*] It would reduce it something like two, would it not?—I make it 15·17 instead of 18·66.

3762. Mr. *Webster.*] Do you now hand in returns showing the capital, receipts, and expenditure for 1861 and 1864?—Yes (*handing in the same*).

Vide Appendix.

3763. Referring to the return for 1864, it shows the capital, receipts, and expenditure of each company supplying gas to the metropolis?—Yes.

3764. Will it be sufficient if I go in detail through the Chartered Company, to explain the meaning?—There is one slight difference between the way in which the Chartered account is rendered and the way in which the other accounts are rendered; you would find that the Chartered Company on the receipt side have deducted the cost of public lighting, and have not put it, as other companies have done, on the expenditure side; to be consistent with the other companies, it ought to be added to the expenditure instead of being deducted from the credit side; the balance is the same as that framed from the accounts of the other companies.

3765. Is that the case with all the companies?—Not with all; it is the case with the Chartered and with the Western, but I have followed the accounts which they have given, although in point of fact the expenditure is rather more than is shown in the accounts; the Chartered Company has deducted from the gross receipts for public lighting the amount of 4,365*l.*, being the cost of repairing and lighting the public lamps; that, to be consistent with the other companies, should have been added on the other side of the account, but I have allowed it to remain on the receipt side, inasmuch as it does not affect the balance.

3766. To what other companies besides the Chartered is that observation to be applied?—To the Western also, but the amount is not nearly so large.

3767. The Chartered and the Western are subject to that observation?—Yes.

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3768. But the others are all free from that objection?—Yes.

3769. I observe that the return contains the price of coal per ton in 1863, and the quantity of coal used in 1864?—Yes, the price of coal is obtained from Mr. Moor's return.

3770. On the receipt side you have the amount received from the sale of gas, less bad debts, 228,417 *l.*?—Yes.

3771. What is the second column?—The amount per ton corresponding with that; it is the 228,417 *l.* divided by the number of tons of coals.

3772. That shows the amount of receipts referable to each ton of coal?—Yes.

3773. What are the next two columns?—The amount per thousand feet made and sold.

3774. Have you dealt with the other items of public lighting and the other receipts in the same manner?—Just so.

3775. What are the total receipts?—£. 307,575; the amount per ton, 42·38 *s.*

3776. And what the price per thousand feet?—The price per thousand feet made, 55·094 *d.*; the price per thousand feet sold, 63·570 *d.*

3777. What is the reason of the difference in the amount per thousand feet sold and made?—Because there is a considerable larger quantity made than sold; there is a certain loss by leakage, condensation, and some other causes.

3778. The right hand side of the account shows an analysis of the expenditure dealt with in the same manner?—In the same manner for each item comprised in the Secretary of State's form.

3779. You have there the balance, being the shareholders' profit?—Yes.

3780. That is the profit the shareholders receive?—Yes, that is the profit the shareholders might receive: it is not always divided amongst them; it is absolute profit made during the year, with the exception of one or two items which are really in addition; for instance, there is one item of additional meters in the accounts, under the head of "Restoring and replacing Meters," and the reserved fund is also in addition to the profits.

3781. With regard to the Equitable Gas Company, have you a similar observation to make upon that?—Yes.

3782. In the Equitable account, on the receipt side, there is an amount of 7,217 *l.* brought forward as balances from last year?—That, of course, is not a receipt in 1864, and is therefore deducted from the profits shown on the expenditure side of the account.

3783. In the return to Parliament from which this is taken, the Equitable Company have carried forward a balance of profit that ought to have been divided?—That is so. At the end of the same account you will find, balance to revenue next year 5,470 *l.*, that, of course, is added to the profit of the year. The explanation is this, that the balances brought forward at the beginning of the accounts of the last year are deducted, and the balances at the end of the receipt account taken to the next year are added, because they are evidently earned in the year.

3784. You told us that the paper you handed in yesterday showed the profits upon the returns as made by the company, to which certain exceptions may be taken?—Quite so.

3785. Referring to the return you have now handed in, on page 17, I observe the expenditure divided into different items?—Yes.

3786. Are there in those columns any items to which exception might be taken?—There are several columns, for instance, the column headed "Directors and auditors," and the next column, "Salaries and commission of collectors," and all the columns throughout show great discrepancies between the various companies in their working expenses, the ratio being sometimes one to three; that is, one company working at three times the expense of another; but the column which is most important, and which probably shows something like a large application of revenue in extension of works, is the column headed, "Repairs of retorts, works, and mains," where the discrepancy is very great indeed; for instance, the Western Company works at 3·233*d*, per thousand feet, and the London at 13·320*d*.

3787. *Chairman.*] I supposed that might be explained by one Company having more heavy works to do than another, incidental to the particular year?—These accounts profess to be the actual current expenditure of each year, and

I say

I say there ought to be no such variation as that; the accounts ought to be as near as possible alike in each year. This is the ordinary current reparation, and carrying on of their works, whereas these large items look as if they included large extensions out of the profits.

3788. *Chairman.*] Will not the smaller companies probably have a larger expense than the larger ones?—Yes; that would come chiefly under the head of "Directors and auditors," and partly under "Salaries and commissions."

3789. It explains that variation?—It might explain the difference in the first two columns, but certainly not in the column headed "Repairs."

3790. Mr. *Hartley.*] After a period of seven, eight, or 10 years, large repairs will sometimes take place, involving some thousands of pounds in one year; that is the case with all manufactories, is it not?—I do not see how that can be, because you will find in all the four years the very same discrepancies existing.

3791. Do you mean that it exists in the same companies?—In the same companies, I think.

3792. Mr. *Morrison.*] The per-centage of profit made by the City of London Company is remarkably low, according to your table?—It is low, because it is a question of the excessive capital of the company; you will find in the first table handed in relating to capital, the capital of that particular company is very high; it is given in page 16, and is 7·45; it is one of the very highest of the companies; the Western is 10·89; that is higher still.

3793. Mr. *Webster.*] Do you also produce the accounts of 1861, treated in the same manner?—I do. (*The accounts were handed in.*) *Vide* Appendix.

3794. Sir *William Gallwey.*] I think I asked you the last time you were here if you could afford any explanation of the great difference between 29 per cent. and 14 per cent. profits arising in one year; now, I would ask you if you can give us any explanation of the great difference between the repairs, amounting in the London to 13·320, and amounting in the Western to 3·233; having made a mistake in one case, it is probable, or possible, there may be a mistake in this also?—You will observe the ordinary repair and maintenance of plant in the account of the Western Company, page 14 in the Parliamentary Paper, is 2,900 *l.*; that of the London Company, under the same wording, is 29,000 *l.*

3795. What is 29,000 *l.*?—"Ordinary repair and maintenance of premises." I do not think there is any mistake.

3796. Now, I see there is a column here for "Replacing meters," but there is no column for "Relaying mains?"—That is included under the item "Repair and maintenance of mains." The exact wording in the Secretary of State's form, looking at one account at random, the South Metropolitan, is this: They give "Ordinary repair and maintenance of premises;" then "Rents, rates, taxes; manufacture, supervision of labour for general purposes;" then "Distribution, including mains and surface pipes," as a general heading, comprised in two items, ordinary "Repair and maintenance."

3797. Relaying of mains is ordinary repair?—That would be included under the head of "Ordinary repair and maintenance."

3798. Then, if the London had to relay several miles of mains, that probably would account for the difference?—But in the year 1864 the amount under that head altogether is only 2,639 *l.*

3799. Relaying of mains?—Included under that item, and there is no other item which properly would include it, except that one. The relaying should evidently be included in "Ordinary repair and maintenance."

3800. Do you think there is any reason for this great expenditure that the City of London have not thought proper to tabulate; is that your impression?—I can only account for it by the probability that some extensions of the works are mixed up with ordinary repair.

3801. Then they have not correctly stated the relaying of mains?—There is no heading in the Secretary of State's form which requires them to state distinctly "Relaying of mains."

3802. "Relaying of mains" would account for such an extraordinary difference?—If I found it in only one year it might perhaps be accounted for in some such way as that; but I believe it travels through all four accounts that we have.

3803. Is it your impression that there is any expenditure, including that large sum, which is not fairly given in the returns which you hold in your hand?

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hand?—My impression is that it does include extension of works in some form or another, and that it is not current expenditure.

Cross-examined by Mr. *Burke.*

3804. You are aware that under the Metropolis Gas Act it is the Secretary of State, is it not, who prescribes the form in which the gas companies shall send in their accounts?—I believe he does.

3805. Therefore, all the accounts sent in to the Secretary of State must be in accordance with the form which he prescribes?—I understand so.

3806. You do not represent, I presume, that any company has divided more than the 10 per cent. to which they are limited by Act of Parliament?—I have no reason to suppose they have divided more than the 10 per cent. in addition to the back dividends, to make up the 10 per cent. for the past years.

3807. Then each company, according to your notion, or information, has complied strictly with the terms of the Act of Parliament in furnishing the Secretary of State with the accounts required by him, and not dividing one sixpence more than they are restricted by the Act of Parliament from dividing?—Yes, so far as I understand, they have done so.

3808. Now I see in your account you give the thousand feet made and sold; where do you get those items from?—I take those from acknowledged facts with reference to the manufacture of gas.

3809. What do you mean by acknowledged facts?—Facts I have heard quoted by engineers on both sides of the question; those facts are stated on page 3 of the Return for 1864; the items are all here.

3810. "Acknowledged facts" is rather an indefinite term; you began by telling my learned friend that this paper handed in by you was compiled from a return sent in by the companies under the Act of Parliament?—That was limited as to the mode in which the accounts were derived; perhaps the minute distinctions may not have been made between one part and another; I stated all the amounts were taken from the companies' own accounts; that the prices of coal, and especially the amounts of coal, were derived partly from Mr. Moore's return and partly from the companies' own accounts; then the two last columns were calculated from those previous data, and from assumptions.

3811. My question simply was this: have you got those returns of the number of thousand feet made and sold from any accounts delivered by the companies, at all?—No.

3812. Then it is assumption on your part altogether, that the companies have made a certain amount, and sold a certain amount?—Yes, an assumption, as I stated at first; but I say that even if the assumption were wrong, it is perfectly fair to the companies, because it goes through the whole of them; as this is a comparative account, it cannot matter whether I have taken a little more or a little less per ton.

3813. In this account of the Equitable Company, you complain of the balance being brought forward?—I do not complain, I only say the account is in that form which renders a little attention to it necessary in working out and ascertaining the actual profit of 1864; that is to say, we have to deduct the balance brought forward on the receipt side for the year previous, and we have to add the balance left undivided at the end.

3814. Then it is simply explanatory of your deduction, rather than any complaint that the Equitable Gas Company have been wrong in carrying forward that balance?—I intended to make no complaint in making that explanation.

3815. Now, as to the amount of the working expenses, you have given the amount of the Western Company as comparatively a small amount of working expenses, as compared with others, under the head of "Repairs, retorts, works, and mains;" they are a cannel coal gas company, are they not?—They are.

3816. And you compare them with other companies which are not cannel coal gas companies?—Yes.

3817. Is it within your knowledge that there may be a difference between the "Repairs of retorts" in the one case, as compared with the other?—No; I think the working expenses ought to be about the same per ton of coal.

3818. Will you undertake to state that they are the same; it is not per ton of coal, it is per 1,000 feet of gas sold by each of the London companies?—You observe in the Western Company I have taken 10,000 feet of gas made, and

8,759 sold; those are different amounts; I think that applies to the point you are speaking of; I have allowed for that.

3819. Do not their working expenses and their repairs of retorts vary from year to year, according to circumstances; they are not always a fixed sum?—They may vary slightly from year to year.

3820. Do not you know that in one case to which the Honourable Member has drawn your attention, the London Gas Company, in the year 1864, were removing their works altogether from one locality to another?—I was not aware of that.

3821. If you were made aware of it, perhaps that might at once elucidate to you the fact of their having a larger price for repairs?—I have the accounts for the whole four years worked out; if I may refer to those accounts which have not been produced, I think we should find the expense has been about the same in each year.

3822. I am alluding to a particular year?—I say my impression is I should find about the same expenditure in each year.

3823. You mean they work at a higher expense than other companies?—Yes.

3824. How long have they been removing their works?—I do not know anything about that.

Re-examined by Mr. *Webster*.

3825. There is one table showing the different prices of coal gas per thousand feet illuminating power, and the cost of the towns enumerated——

Mr. *Burke*.] I will show you 50 where it is higher.

3826. Mr. *Webster*.] We want to show where it is lower; is that paper correct?—It is correct, so far as I have been able to ascertain.

Mr. *Burke* objected to the reception of the document on the ground that it was perfectly fallacious; there were no data to guide the Committee in judging why the gas was sold at that particular price, and he might bring 50 or 100 instances in which it was dearer.

Mr. *Webster*.] I propose to prove this paper by Mr. Hughes.

3827. *Chairman*.] Is Mr. Hughes in a condition to prove it?—With reference to Birmingham, I know it well, and I vouch for every fact in this paper as to Birmingham.

3828. Mr. *Burke*.] Is it 14-candle gas?—Yes, by their last Act.

3829. Mr. *Webster*.] Do you know several other of the cases of your own knowledge?—I do.

3830. Do you believe this paper to be correct?—I do.

The *Chairman* said unless Mr. Hughes knew the facts of his own knowledge, the document could not be received.

Mr. *Webster* said he should have to call another witness to prove those which Mr. Hughes did not know.

The *Chairman* said that after an examination of the paper he did not think it would be any guide to the Committee, and the Committee must decline to receive it as evidence.

3831. Mr. Alderman *Lusk*.] I wish to ask you one or two questions in reference to what you stated yesterday; in buying gas from a company, what is the best instrument for measuring?—The gas meter.

3832. Do you know any reason why public bodies should not buy gas by meter?—Do you mean for public lighting?

3833. Yes?—I think there is no reason whatever why it should not be supplied for public lighting by meter; I think, on the contrary, it would be far more equitable for both parties.

3834. Supposing the same gas is supplied to a lamp in the street and supplied to a shop opposite the lamp from the same main, would it be a difficult thing for the company to tell a man who has a shop where there are perhaps 20 or 30 burners, that he is to put a meter to every one of those burners?—It would be very unreasonable, no doubt, to do so.

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3835. And I suppose the very same principle would apply when you direct a public body to put a meter to each lamp?—The gas companies do so, because they consider each lamp to be a separate consumer; I suppose that is the plea that they urge; but at the same time it is only like a light in an ordinary house. It may be called a separate light, and also a separate consumer.

3836. If I buy gas, and it comes through a meter to me, it is no business to the company how I use it at all?—It is no consequence of course to a company, provided they sell by meter, and the consumer has no control over the gas beyond his own meter; it is no business of the company what he does with it afterwards.

3837. Is it reasonable for a company to ask you to put a meter to each lamp any more than to ask you to put a meter to each light in your own house?—I can scarcely go the length of saying that, because they ask you to put a meter to each lamp on the plea that each lamp is a separate consumer. Each light in a house is not a separate consumer; it is a separate light. There is something to be said on both sides of the question. In one sense, a public lamp is only like a single light; in another sense, it is only like a single consumer. The local authority is the consumer in the aggregate; still each lamp is a separate consumer.

3838. Would not one meter in 12 be sufficient?—I think it would be perfectly so, and perfectly equitable to both sides, and I think the present vice of the contract system in public lighting would never have come into use except from the peculiar circumstances of the case.

3839. Would it be reasonable to compel a railway company to take only one carriage to every engine?—Very unreasonable.

3840. When they can take 12 just as well?—Quite so.

3841. *Chairman.*] Would one meter govern 24 lights?—In one town I know, there is only one meter to 70 lamps.

3842. Is it found sufficient?—Practically they do find it sufficient. I do not know perhaps all the complaints that have been made on one side or the other, but, as far as I understand, it is satisfactory there.

3843. Mr. Serjeant *Kinglake.*] Do they keep them on the same lamp, or do they vary them from time to time?—I am referring to the town of Worthing, where they keep them on the same lamps; they have 280 lamps, and only four meters for the whole.

3844. Mr. Alderman *Lusk.*] We are speaking about the working of the Act of 1860, and we find many complaints from vestries and other public bodies that they cannot get the gas as they want it. You say it would be a desirable thing if the public bodies bought the gas by meter?—I think so.

3845. You think it is a reasonable thing?—Yes.

3846. Do you think it is very unreasonable to compel them to have a meter to each lamp?—I do, because I know where that proposition has been made by the companies it has served as an obstruction.

3847. Just as to compel a railway company to take only one carriage to their engine?—Quite so.

3848. Do you know any town where this scheme is adopted?—Oh yes; I gave yesterday a number—Reading, Torquay, Bolton, Worthing; in Worthing there is a small proportion, but I am speaking of towns that have a proportion of meters; Leicester is another; it is sanctioned in Birmingham, Leamington, and Nottingham, and they are bringing it into operation in these three last-mentioned towns.

3849. Does it work well in these towns?—It does perfectly; I may say I have known Worthing well, because I have been arbitrator at Worthing for the Board, and, as far as I understand, the system is perfectly satisfactory.

3850. You may just as well sell gas by meter as water companies do water?—I think it is far more equitable to sell gas in that way.

3851. The London water companies sell water in that way?—To large consumers, no doubt.

3852. Are you well acquainted with the manufacture of gas?—Yes.

3853. The real question I want to ask you is, what is your opinion, considering that we are in London, and considering all our advantages and disadvantages, what do you think the companies could sell gas for to the public?—You mean gas of 12 or 14 candles?

3854. Yes,

3854. Yes, according to the Act?—Do you mean to pay 10 per cent. interest on their capital, or any such rate?

3855. If you like, you may take it at that; what is really the cost of gas, that is the question after all; what is the cost of gas to the public; what would you produce it for?—I should divide the cost of gas to the public into three parts; one applying to the raw material, the second applying to the manufacture, the third to interest on capital; if we add interest on capital, at 10 per cent. on a moderate capital, I think 12-candle gas could be supplied for about 2*s.* 10*d.*, made at the most economical rate, and with an economical capital.

Mr. *Burke.*] The question is, what is the capital?

3856. Mr. Alderman *Lusk.*] We have nothing to do with immoderate things at all; we are to take things in this world as we find them, and we want to know for what cost, by reasonable diligence, you are able to produce good gas to the public; 12 candles?—I think the price ought certainly not to exceed 2*s.* 10*d.* per thousand feet.

3857. Including the 10 per cent.?—Including 10 per cent. on their capital; of course, with less interest the price would be very much less.

3858. Who controls the expense of production in the present companies?—There is no control as far as the working of the companies is concerned till that working is examined into in the shape of their accounts being revised.

3859. Who revises their accounts?—I understand there has been no revision since the passing of the Metropolis Gas Act; nor was there before.

3860. There is no control, then, at all?—There is no control at all.

3861. Who appoints the directors and the directors' fees?—The shareholders, I imagine, themselves.

3862. Who is to pay for bad management, supposing there is bad management?—All those matters, I take it, are entirely within the control of the company, and nobody else.

3863. Supposing the company can produce 12 or 15 per cent., is there any inducement for them to have good management?—I think the companies often try every expedient before they can be induced to lower the price of gas.

3864. Is it the interest of the companies to reduce the price of gas, looking at things as they are; whenever they are above 10 per cent., they must reduce the gas; is it their interest to reduce the price when they get the 10 per cent. profit?—It is not their interest in the sense of any pecuniary gain being involved; probably their interest is to the contrary; but there may be considerations beyond that, looking to the future, and so on, which might induce them to reduce the price, with the view of getting more popular, extending their works, having more scope for capital; but as far as immediate pecuniary considerations are concerned, I think there is nothing to induce them to lower the price when they get up to the 10 per cent.

3865. If they pay anything more than 10 per cent., they must reduce the price of gas?—With some other restrictions; there is a reserve fund, and in the case of the London companies there are back dividends falling short of 10 per cent., which they may make up for the last six years; when these conditions are fulfilled they ought to reduce the price.

3866. Really and truly the present system is a premium on bad management?—It is to a certain extent viewed in that way,

3867. I suppose science is progressing a good deal, and also art; do you know, where they have a fixed price, is it likely the companies will avail themselves of all the means of science and art?—I think not when the prices are fixed; there is nothing illustrates that more than the history of gas lighting itself, because when gas was first introduced it was 18*s.*, 20*s.*, or 22*s.* 1,000 feet; and it has been gradually reduced to the present low price.

3868. Did you ever in your experience know any company that has had protection that ever was very diligent in getting improvements or managing things well?—No; I think that competition is a great stimulus to reduction of price, so far as companies are concerned; of course monopolies are very much opposed to that.

3869. Is it not said that "necessity is the mother of invention"?—No doubt.

3870. And where people have no necessity to compete with other companies, they won't lower their prices if they can help it?—That was the case in the early days of gas lighting, when monopolies did exist in extreme cases; prices

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were very high, and attempts to reduce the price seldom came from the companies themselves, but from external action.

3871. Are the products of the coal more valuable in London than in other places?—I cannot say that; they have a certain value in London which may be represented perhaps at a little more than half the cost of the coal; that is to say, at least one-half of the coal in the average working of London companies is returned in products; if they pay 16*s.* per ton for coal, they get at least half back in products: I do not say they pay 16*s.*; I think it is nearer 15*s.*

3872. I suppose secondary products are more valuable here than in country places?—I cannot say they are more valuable with reference to the first cost of the coal, because in Birmingham the products pay back the whole cost of the coal.

3873. Speaking about producing gas and what the contracts ought to do, do you think it is proper and advisable that a company should have a monopoly of a particular district in London?—I think a monopoly would be safe with very stringent restrictions in certain parts of London; I am not quite sure whether the city is not a peculiar case, it is so densely populated; but, I think, with reference to London generally, that a monopoly might be made perfectly safe so far as the public are concerned, with very stringent regulations.

3874. You think they should have very stringent rules?—Yes; much more stringent than those now imposed upon the companies.

3875. I suppose you think capitals should be in some proportion to the quantity of gas?—I think that is very essential.

3876. Mr. *Hartley.*] What do you propose to do with the surplus capital, do you propose to confiscate it?—I do not propose to confiscate it, but I propose some equitable adjustment of the capital.

3877. Mr. Alderman *Lusk.*] I suppose people and merchants engaged in business have nobody to look after their interest except themselves, as a rule, and if they put too much money in their business, that is their fault?—I should imagine that is so.

3878. If a contractor or a builder builds too expensive a house he must lose the chance of letting it at a profit?—That is his own loss.

3879. *Chairman.*] You have been asked a question with regard to the capital of these gas companies, are you acquainted with the amount each company represents its capital to be?—I think in the first table I handed in that is stated.

3880. Does that represent the market value of their capital or the capital originally subscribed to the company?—It represents the capital which they return to Parliament as their existing share and borrowed capital; it is partly share capital, and partly borrowed.

3881. Is it the same sum as the shares of a company paying 10 per cent. would bring in the market?—Oh no; I take it the market value is a very different thing. It would be higher in proportion because the share capital is represented by the nominal value, the real value at which the shares are issued.

3882. Is the Parliamentary return in accordance with the originally subscribed capital?—I take it that it is so.

3883. Sir *William Gallwey.*] One question as to the return of expenditure. I see a very considerable sum returned by the Chartered Gas Company for rental of meters; between 4,000 *l.* and 5,000 *l.*; and then I see no receipt acknowledged by any of the other companies, or by most of the other companies, for the rental of meters?—You are speaking of the receipt.

3884. The Chartered Gas Company returns 4,549 *l.* for the hire of meters, and then you will find several other companies, larger than the Chartered, who return no receipts?—There are several companies who supply meters rent free, without a charge.

3885. Mr. *Morrison.*] Can you explain to me the column headed "Reserve Fund" in the paper handed in yesterday. Take the Independent Company?—These, I imagine, are accounts, which the company choose to place themselves to an account which they term "Reserve Fund."

3886. Take the Independent; their capital has been uniformly 120,000 *l.*; in 1863, they put their Reserve Fund 9,000 *l.*; in 1864, they put their Reserve Fund 7,000 *l.*; that makes, as I understand, their total Reserve Fund, at the end of the year 1864, 16,000 *l.*?—It would be so if they used no part of the previous 9,000 *l.* to make up their dividend in 1864; they may have done so, or they may not.

3887. Can

3887. Can you say?—I think I could see from the accounts if that has been done. It appears that, in the account for 1864, the company themselves return their Reserve Fund as 18,000 *l.*

3888. It is 6,000 *l.* above their proper limit?—That is, in fact, more than the 10 per cent. of their nominal capital, as I understand it.

3889. Will you tell me what balance they carried on to the next year, 1865?—They seem to have carried on a balance to 1865 of 10,923 *l.*

3890. That is equivalent to increasing their Reserve Fund so far, is it not?—Except that I find in the account for 1864, they bring forward a balance on the receipt side of 7,988 *l.*

3891. That will increase their Reserve Fund practically to 21,000 *l.*?—I take it it would be the difference between 7,900 *l.* and 10,000 *l.*; it seems to be an addition to the 18,000 *l.* of 3,000 *l.*

3892. When the Reserve Fund gets beyond the limit fixed by Parliament, the price of gas ought to be reduced?—That is so.

3893. Do you know whether the Independent have recently reduced their gas?—I believe that is one of the companies supplying at this moment at 3 *s.* 4 *d.*, so that they have reduced.

3894. Do you know when they reduced it?—I do not quite know when the reduction was made.

3895. There is nothing to show what the Reserve Fund is at this time?—There is nothing.

3896. Would you look at the South Metropolitan Company; you find in the year 1861 they only paid a dividend, as I understand, of 3,000 *l.*, and put their Reserve Fund at 18,000 *l.*?—I do not think that they paid this dividend; that was the profit as shown in the account for the year, in addition to which they put 18,499 *l.* to Reserve Fund.

3897. Again in 1863, they seem to have paid a dividend of only 2,000 *l.*, and have put to their Reserve Fund 20,000 *l.*?—It does not follow that they only paid a dividend of 2,029 *l.*, because they probably brought forward a balance from the year before; the profit shown in the account is only 2,000 *l.*, on the working of the year, plus the amount of the Reserve Fund of 20,000 *l.*, making a total profit of 22,507 *l.*

3898. Then it is not possible to find out accurately what is the present state of the Reserve Fund?—It is very difficult to trace the Reserve Fund and the balance, which they bring forward from year to year.

3899. Mr. Serjeant *Kinglake.*] Upon this table, as I understand it—take the Imperial Company for 1864—you have a share capital on which the dividend is paid, 1,170,000 *l.* That is what you would call it, whatever the value of the share is as originally appropriated?—That would be so.

3900. Not its present value?—Certainly not.

3901. Then you go on in the second column, "Profit as per Account," that is the profit which they have put in their account as paid upon capital. Then you get the "Reserve Fund, 42,567 *l.*," giving a total profit of 162,000 *l.* Then you calculate that per centage on the share capital 13·92; is that taking the total profit, the 162,000 *l.*, as the basis?—Taking the whole profit left, after paying interest on any borrowed money.

3902. It includes the Reserve Fund?—It includes the Reserve Fund.

3903. In what way that Reserve Fund has been applied you do not know?—I do not know that, except that in some of the accounts we find a balance brought forward from previous years.

3904. But in what way it has been applied, whether for past dividend or what has been done, there is nothing to show?—Nor could there possibly be until the next year, because this is a sum put to Reserve Fund in a given year.

3905. Then it may be carried on?—Some light may be thrown upon the subject by the next year's account; but there is none in the current year.

3906. Mr. *Morrison.*] Would you be able to supply the Committee with a Table of the Reserve Funds in the published accounts of the companies in the year 1861, with the amount of the share capital?—I am not sure whether it would lead to any result if one were to attempt to work out what has become of these Reserve Funds. It might be partially traced; but I am not prepared to say that it would lead to any result, or that it could be traced.

3907. *Chairman.*] Do you know whether there is any accumulated Reserve Fund in any of these companies; take the Imperial for instance; there is a large

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amount for two past years. Do you know in what way that is either invested or accredited to the company?—I find an account given in the Imperial Gas, called "Contingency and Reserve Funds," in which there is a balance brought forward of 46,770 *l.* There is another item, "Revenue Account as above," that is a balance from Revenue Account. Then there is a small amount for dividend on Consols.

3908. Those Consols would represent the sum they are allowed to accumulate under the provisions of the Act of Parliament, amounting to one-tenth of their capital?—Those would represent only about 20,000 *l.* The dividend on Consols seems too small to represent that sum.

3909. Their accumulative reserve fund, by the powers of the Act of Parliament, would amount to above 100,000 *l.*?—No doubt.

3910. You do not trace that invested capital?—I do not trace that precisely; I think I find the balance on Reserve Fund taken on to the next year, and the balance on Contingency Fund, making 90,000 *l.* together. I find that at the end of the account for 1864.

3911. Have you any reason to suppose that they possess any other Reserve Fund?—I have no reason to suppose that from the account.

3912. You cannot trace it?—I cannot be certain about it.

3913. Mr. *Dutton.*] I suppose you had no hand in making up these accounts. You take an account in your hand, and explain it in the best way you can, but you have nothing to do with making the accounts up?—I have nothing to do with making up the accounts of the company, but I had to do with making my own accounts up.

3914. You do not know, of your own knowledge, how all these things are allocated; do not you know that all companies make up their accounts in different ways?—I think the gas companies profess to make up their accounts in the same way.

3915. There are different ways; some companies charge more to revenue than to capital, or put under the head of capital what ought to be revenue; there are a hundred ways of doing these things, and unless you were an accountant, or audited these accounts, I do not think you can explain them?—I can only take the absolute items prescribed by the Secretary of State, and, supposing the accounts to be kept in that form, and the items to be properly placed, then I can form conclusions from them.

3916. I expect the secretary of the company knows more about it than the Secretary of State?—Possibly he would know more about his own company, but still I presume the accounts were properly rendered according to this form; if it were not for this form I could not attempt to analyse these accounts.

3917. Mr. Alderman *Lusk.*] Do you make up your statement from the published accounts of the company?—Yes.

3918. You do not suppose they cook their accounts?—No, I do not make that supposition.

3919. Mr. *Morrison.*] Are you able to say how these items: "Salaries, collectors' commission, stationery, printing, supervision of labour, repair," appear in the accounts of corporation gas companies?—There are some corporation accounts I have analysed which are very much lower than any of those of the London companies; I may say the corporation accounts of Rochdale and Walsall are very much below; the rate of working for gas expenses in the aggregate in those towns is perhaps considerably under 7 *s.* per ton, whereas in the London companies it is more like 11 *s.* or 12 *s.*

3920. Do you know from your own knowledge?—It is from my own knowledge of the accounts analysed in the same way as these have been done; accounts rendered by the authorities; rendered in those places, so that there is no question they are correct accounts in each case.

3921. Mr. *Burke.*] Will you be kind enough, Sir, to ask this witness whether in 1857, before the Select Committee on Gas, he did not give this evidence: "'I may take for the price of coal 16 *s.* a ton as an average, and that being so, when the price of coke is 15 *s.* a chaldron, the gas would be 4 *s.* 2 *d.* a thousand.' —Mr. *Whitbread*: 'What is the price of coke?' 'About 10 *s.*, I think, at the present moment; when the coke is 13 *s.* 10½ *d.* per chaldron, the price of gas should be 4 *s.* 3 *d.*; when coke is 12 *s.* 9 *d.* per chaldron, the price of gas should be 4 *s.* 4 *d.*; when coke is 11 *s.* 7½ *d.* per chaldron, the price of gas should be 4 *s.* 5 *d.*; and when the coke is 10 *s.* 6 *d.* a chaldron, the price of gas should be

be 4*s.* 6*d.*'" Mr. Hughes, that is your evidence?—What subject is it about? Mr. *S. Hughes.*

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3922. This is 1859 (*handing the printed evidence to the Witness*)?—This evidence was given with reference to certain circumstances which were assumed to be correct at that time; I have since had a very large oppportunity of comparing working expenses in different parts of the country; I find them to be very much less than I believed at that time, and much less than the assumptions made at this period; these were not intended to give the very lowest price at which gas could be sold, but only to give prices in accordance with certain circumstances assumed at that time.

3923. Now, if the Honourable Chairman will be kind enough to ask further, whether the witness has not this year stated before a Committee of the House of Lords, "I do not mean to say that the London Gas Company will make 10 per cent. at a price of 3*s.* 6*d.*"?—With their large capital, probably I did; capital makes all the difference.

Mr. *Webster* said, with regard to the Imperial Gas Account, the Committee would find in the return to Parliament for 1865, page 9, on the "Contingency and Reserved Funds" there was a balance to next year's account of Reserve Fund of 58,287 *l.*, and Contingency Fund 31,980 *l.*, making together 90,267 *l.* as the Reserve Fund.

Mr. *Morrison* said there was nothing to show what the reserve fund of any of these companies was before 1861; it was possible that all those companies had a reserve fund equal to one-tenth of their capital in 1861.

Mr. *Samuel Edwards*, called in; and Examined by Mr. *Webster:*

Mr. *S. Edwards.*

3924. ARE you Clerk to the Lewisham Board of Works?—I am.

3925. How long have you been there?—Two years; I have had the conduct of the offices there since they were instituted.

3926. When was the Board of Works instituted?—In 1855.

3927. I do not ask you any question previous to 1860; but previous to that had you various communications with the companies on the supply of gas?—Yes.

3928. Now let me bring you down to 1860, after the passing of the Metropolitan Act; what companies supply you?—The Phœnix and the Crystal Palace District Gas Company.

3929. Previous to 1860, there had been a great number of complaints about the lighting?—Yes.

Chairman.] The Phœnix is in our inquiry, but the Crystal Palace is not.

The *Witness.*] They supply a district within the metropolis.

3930. It is not within our reference, nor within that map?—The gas is supplied at a lower rate by the Crystal Palace Gas Company than by the Phœnix.

3931. Mr. *Webster.*] The Phœnix now supply you, I think?—Yes.

3932. What is the population of Lewisham?—About 20,000.

3933. Now, previous to 1860, had you made applications to other companies to be supplied with gas?—Yes; to an Eltham Company.

3934. But in the result I believe you had no alternative but to go to the Phœnix?—Just so.

3935. What terms were you able to make with the Phœnix as regards the supply of gas?—They charged us 4*l.* 10*s.*

3936. For public lamps?—For public lamps.

3937. Were you able to obtain any reduction upon that?—Not at that time.

3938. What time are you now talking of?—1860.

3939. Had you applied to them before that for a less price?—Yes, we had.

3940. What was the result of that application?—It was unsuccessful.

3941. Had you the means of knowing the terms on which the Greenwich Board was supplied?—No; we did not ascertain.

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3942. In 1860, then, you were paying how much?—£. 4 10*s.* for the eight months.

3943. In 1861, was the matter again under discussion?—Yes, it was.

3944. What did you pay then?—The same price.

3945. And how much for the whole year?—We only lighted during the winter months; from September to April inclusive.

3946. Was that payment subject to any condition about the assessment?—Yes. The company informed us that if the assessment were increased the charge would be increased, and the contract was to be vacated if any increase was made in the assessment.

3947. Who prepared and painted the lamps and columns?—The company.

3948. What were the conditions that were made by the company as regards the distance of the mains?—If new mains were required we had to pay as much per foot for every foot of extra main.

3949. How long did that contract continue?—It is in force now.

3950. In 1864, was there any alteration?—In 1864, the light was continued throughout the year, and the charge was five guineas; that was a reduction from the contract of 2 *s.* 6 *d.* per lamp. According to the contract it would have been 5 *l.* 7 *s.* 6 *d.*; the contract provided for lighting for eight months, and also for the year. For eight months it was 4 *l.* 10 *s.*, and for the year, 5 *l.* 7 *s.* 6 *d.*

3951. What was the price charged by the Crystal Palace Company?—At what date?

3952. In 1864?—£.5 in 1864, reduced in 1865 to 4*l.* 17 *s.* 6 *d.*, and at the present time to 4 *l.* 16 *s.*

3953. Did you make application to the Crystal Palace Company to supply you?—Yes; in 1856 or 1857. The whole of the parish is not in the Phœnix district; the Phœnix Company supply about half the place, the other half is supplied by the Crystal Palace Company; so long as that company has been in force they have supplied us.

3954. What is the difference between the amount you are charged by the Phœnix and the amount you are charged in that part of the district which is not supplied by the Phœnix?—9 *s.* per lamp per annum.

3955. Was there any other reduction made to you by the Phœnix?—There was. We applied at the latter end of last year for a reduction; I think the difference in price was then 7 *s.* 6 *d.* between the two companies; we applied for a reduction, and the Phœnix Company said they had already made a reduction of 11 per cent., and they could not make any more; no such reduction had appeared upon our accounts, but there was then an account of between 300 *l.* and 400 *l.* due from the Board to the company, and we struck off the 11 per cent. and sent them a cheque for the amount; they returned the cheque to us, and we found that what they meant was that they had taken off 11 per cent. from three lights which we burned by meter, so that the advantage we obtained from this deduction was something under 10 *s.* per quarter.

3956. What are you now paying?—The same price, five guineas.

3957. Has there been a reduction to private consumers?—Yes, of 11 per cent.

3958. You have not had the benefit of it?—No; except as regards the three lights which we burn by meter.

Cross-examined by Mr. *Burke.*

3959. Do not you know that there is an obligation on the company by the Metropolis Gas Act, to supply the public lights at the lowest price charged to the private consumer?—Yes.

3960. Have they violated that Act of Parliament or not?—I am not aware that they have.

3961. Then they have been fulfilling that Act of Parliament in your district?—In so far as this, that if we were to elect to burn by meter, I suppose we should have it at the same price.

3962. But you contract for a certain amount of gas to be supplied?—No, the company do not contract to supply us with any definite quantity.

3963. Do you not contract for so many lamps burning so many feet per lamp?—No, the company refused to do that.

3964. What

3964. What is the nature of your contract?—The contract was to supply us with as good a light as was supplied to the lamps in Greenwich.

3965. Do you know what the consumption is in Greenwich?—I do not know that they are under any terms as to quantity.

3966. Well now, by comparison with the other districts in London, you pay apparently, about the same price that they do?—I do not know what the other prices are; we pay the Phœnix.

3967. Is not this district of Lewisham a scattered district?—I will answer your first question; we pay the Phœnix 9 *s.* per lamp more than the Crystal Palace Company; the Crystal Palace Company certainly cannot produce gas at anything like so low a price as the Phœnix.

3968. What price is the Crystal Palace Company charging to private consumers?—I cannot say; I think it is 4 *s.* 6 *d.*

3969. What price is the Phœnix charging?—I believe in the parish of Lewisham their price is now 4 *s.* 3 *d.*; it was 4 *s.* 9 *d.*, but they have a distinctive price; the prices are lower, I believe, in other parts of their district than in our part.

3970. But even in your part the private consumer gets his gas cheaper from the Phœnix than he can get it from the Crystal Palace Company?—The private consumers cannot get it from both.

3971. Where the Crystal Palace Company supply gas, do they charge more than the Phœnix Company?—I believe they do.

3972. The Phœnix Company being under the Metropolitan Gas Act?—Yes.

3973. Have you ever made any complaints of their violation in any manner of the Metropolitan Gas Act?—Yes.

3974. Have you taken the remedies prescribed by the Metropolis Gas Act?—In some respects we have.

3975. Which respect?—As regards breaking up the streets.

3976. What was that?—We proceeded against them for penalties for doing so.

3977. Without your permission?—Yes.

3978. And probably you would recover them?—In the only case in which it was done we withdrew upon the undertaking of the company not to do so any more without our consent; they did not do that, but they refused to supply us at all unless by agreement, and an undertaking to consent to all applications.

3979. What, for breaking up the streets?—For breaking up the streets.

3980. You wanted to restrict their breaking up the streets?—We wanted to carry out the Act of Parliament.

3981. What Act of Parliament?—The Metropolis Local Management Act.

3982. Have you ever complained of the conduct of the Company in reference to the supply of gas, whether in regard to quality, illuminating power, or price?—We have complained with regard to price continually.

3983. Have you taken any means whatever, under the Metropolis Gas Act, to procure a reduction in price?—No means have been taken, because the Board were under the impression that no efficient means were in their power.

3984. Well, but if the Metropolis Gas Act says that they shall supply gas as cheap as to the private consumer, you would have the means of ascertaining that fact?—We should, if we elected to consume by meter.

3985. But then, without that, cannot you ascertain the amount of gas you consume?—Not otherwise than by meter.

3986. Have you got some gas lamps supplied by meter, in order to test the quantity?—There is one, a large lamp, having three lights; it has been generally noticed that these give a better light than the others.

3987. But you have the means supplied you at your own request of testing the amount of gas supplied?—We have three lights.

3988. As an indication of the others; at your own desire was not it?—It is not an indication; there is nothing to show that those lights are the same as the others.

3989. You say that they paint and repair your lamps; do they light and put out the lamps too?—Yes; I have the basis of their charge here.

3990. We do not want that; is your district a scattered district, by comparison,

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son, I mean; are the houses far apart from one another?—The district is over a large area; there are thickly populated parts.

3991. And other parts not so?—The scattered parts are not lighted.

3992. Not lighted at all?—Not lighted at all.

3993. Do you mean that the Phœnix Company do not light scattered parts?—More or less so; the parish of Lewisham contains 5,000 acres, and I suppose the lights are comprised within perhaps one-third of that area.

3994. We all know Lewisham pretty well, I dare say; is it not a fact that a large portion of Lewisham laid with gas consists of detached houses?—No.

3995. Will you undertake to state that is not the case, that they do not light detached houses?—Detached and semi-detached.

3996. Well it is not like a continuous street, like London?—Oh no; there are continuous streets.

3997. Is not it a fact that they must of necessity go to a greater expense to light a district like that, than a street where all the houses are all contiguous?—No doubt.

3998. And yet you get your gas at 4*s.* 3*d.*, and your public lighting practically as cheap as they get it in London?—I do not know what the London price is.

3999. What do you pay for the lights they supply by meter?—I cannot tell you exactly what; the price is 4*s.* 3*d.* per thousand feet.

4000. At 4*s.* 3*d.*, what do they cost you; they work out to 6*l.* instead of 5*l.* I am told?—It would be about the same amount.

4001. We will see whether it is not 6*l.*; I may be wrong?—Perhaps you will ask me upon that account (*producing an account and handing it to the learned Counsel*).

4002. I know nothing about the account. Will you undertake to say you do not show 6*l.* per light for those where you burn by meter, whereas you pay only 5 guineas where you do not?—I hold in my hand the company's account to Lady-day. The Secretary of the Company is here; he will understand his own account better than anybody else; I do not pass the accounts.

4003. Were you examined last year upon the Kent Gas Company's Bill?—I was not.

4004. Do not you know that a company tried to establish themselves in competition with the Phœnix; that they were opposed by the inhabitants of Lewisham and their Bill thrown out?—There was a divided opinion as to the feasibility of the company, and many of the inhabitants objected to it on the ground that the works would be a nuisance. I believe that was the only ground taken.

4005. There was an investigation before Parliament last year, was there not, in which every sort of complaint that could be brought against the Phœnix was brought before them, and Parliament decided in their favour, and threw out the competing Bill?—I do not know; I was not concerned in it.

Re-examined by Mr. *Webster.*

4006. You told my learned friend the Phœnix Company were bound to supply you with as good a light as they did at Greenwich?—Yes.

4007. Did they do that?—That is such a very loose condition to be put under, that I do not know whether they did or did not.

4008. That was made a matter of complaint?—Those were the terms of the contract.

4009. Now you were asked several questions about this Crystal Palace Company; you say the Crystal Palace Company cannot produce their gas as cheap as the Phœnix can?—I think their works are seven or eight miles from the river, which would tend to an increase in the price of coal, whereas the Phœnix works are on the river banks.

4010. So far as the Crystal Palace Company is concerned, have you ever had a difference with them?—None at all.

4011. Have you had constant differences with the Phœnix?—During the whole time they have lighted the parish.

4012. Now about the Metropolitan Act; I believe there is a clause in the Crystal Palace Act for general arbitration?—Yes.

4013. Has that anything to do in your opinion with your having got on better with

with the Crystal Palace Company than with the Phœnix?—I am inclined to think it has; it gives us great power over them.

4014. Do you conceive such a power ought to exist in the Metropolitan Act, or at all events for your protection against the Phœnix?—It would be a great advantage to the ratepayers.

4015. My learned friend is anxious you should read the 38th clause of the Metropolitan Gas Act; I think your Board have had no encouragement to attempt to apply that Act?—None whatever.

4016. Do you know any Board that has succeeded in applying that Act?—I do not.

4017. Is it in consequence of your opinion that you would not succeed in applying that Act; that it is not applicable; that you have not applied it?—I believe that is the reason.

Mr. *Burke.*] He says he wants an arbitration clause; let him read it.

Mr. *Webster.*] "If any difference arise between the local authority and the gas company with respect to any alteration in the test, or to the rate to be charged for gas supplied, or for lighting any public lamp, the difference shall be referred to and be determined by arbitration in the manner prescribed by 'The Companies Clauses Consolidation Act, 1865,' with respect to the settlement of disputes by arbitration."

Witness.] I am aware there is a similar clause there.

4018. At all events you are not aware of any Board succeeding in getting any reduction under that clause?—No, I am not.

4019. Mr. *Paull.*] Do you know of any one who has ever tried?—I think not, for the reason that has actuated my Board, that they are not at all strong enough to contest with the Phœnix Company.

4020. *Chairman,*] They decline litigation; is that what you mean?—Oh yes; litigation and a questionable result with a public company.

4021. Mr. *Paull.*] Why do you think the arbitration clause in the Crystal Palace Company's Act is one under which you could obtain relief?—They are a younger and a weaker company, and would be more equal combatants.

4022. This is not a defect in the law in either case, but it is money against money?—We have greater power over the Crystal Palace Gas Company than is given by that clause.

4023. Probably you think it would be better for weak companies to supply gas than strong companies?—Oh no.

4024. The public would have more power over them; is not that so?—Not quite so.

4025. It is so in the Crystal Palace Company, at all events?—In one case we should not be overpowered by strength, and in the other we should.

4026. But the arbitration clauses in each Act I presume are very similar?—I think not; I think there is a material difference.

4027. But you said a moment ago it would only be a question of money?—Not only a question of money, certainly.

4028. What is the meaning of "the strength of a company," if it is not concerned in its money power?—That is the meaning of the difference in the strength of the company. I did not say it depended wholly upon that.

4029. What does it depend upon; why do you think you would obtain more relief under the arbitration clause of the Crystal Palace Company than under the arbitration clause of the Metropolitan Gas Companies' Act?—I think the clause is a wider one, and gives us more power.

4030. But this is different to what you said a moment ago?—I said so before.

4031. You said you had not put the arbitration clause in effect against the Phœnix Company because it was so strong a company, and that you did not like to enter into litigation with so strong a company?—No doubt; that is one reason.

4032. Then you have not much confidence in your cause of complaint?—Oh yes, I think we have the greatest confidence, and it could not be more clearly shown than in this, that a young company, who can only produce gas at a very much increased cost, supply us at a very much lower price.

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4033. You never have tried an arbitration under the arbitration clause in their Act?—We have not.

4034. So that what you now say is conjecture?—It is a reasonable deduction from the facts.

4035. It is conjecture, without ever having tested the fact?—What do you mean is conjecture?

4036. You have told the Committee that you have never tried a case under the arbitration clause of their Act; still you say that you would try one, and would expect to obtain relief if you did so as against the Crystal Palace Company, but that you would not obtain relief if you tried it as against the Phœnix Company?—I did not say so.

4037. Mr. Alderman *Lusk.*] Have you had many complaints down your way about gas?—A great many, by consumers generally.

4038. And your Board looking at the Act of 1860, and looking at the company they were dealing with, thought it was no use going to law with them?—That was the reason.

4039. You say the company would not contract with you at all?—They would not.

4040. They were to give you gas as good as in Greenwich?—Those were the terms of the original contract.

4041. Do you consider those terms will at all hold water?—No.

4042. I suppose most lawyers would make a hole in that contract?—Any lawyer would; or any one who was not a lawyer.

4043. When you found fault with the taking up the streets, they told you they would not contract with you at all, unless you complied with their conditions?—They did, and for one winter we lighted all the lamps with naphtha, rather than submit to what they put upon us; they put upon us 10*s.* a lamp extra, which they called equivalent for an exorbitant assessment.

4044. You tell me as a fact, that the gas company said, unless you would comply with everything they wished, they would not supply you with gas, and you acted according to what you thought was the law?—That was so.

4045. Was not that taking advantage of your necessities?—The Board thought so; no doubt it was.

4046. Now, about this scattered district, I know something about it; you say, in supplying this scattered district, the Crystal Palace are supplying gas at 4 *s.* 3 *d.*; do they supply it at 4 *s.* 3 *d.*?—4 *s.* 6 *d.*, I think, is their price to private consumers.

4047. And if a company in a scattered district of that sort supply you at 4 *s.* 6 *d.*, do you think a company in the concentrated space in the centre of London ought to supply as cheaply as 4 *s.* 6 *d.*?—I think, as a matter of course, they should supply at half the price.

4048. When a man has got a large estate and makes a number of works, do you think he ought to complain of the size of his district? If he has a very large estate and a very large piece of ground, should he complain much about the distance of travelling from one part to another?—I think not

4049. And I think a gas company, taking up a large district in London, should not complain much about the distance they have to go from one part to another?—No doubt they have counterbalancing advantages.

Mr. *De Jersey*, called in; Examined by Mr. *Hoggins.*

Mr. *De Jersey.*

4050. You are a member of the Court of Common Council?—Yes.

4051. And are also Chairman of the Court of Commissioners of Sewers?—Yes.

4052. You were also Chairman of the Special Committee appointed in June 1864, by that court, for the purpose of investigating the supply of gas to the City?—Yes.

4053. The Court of Sewers has by law, has it not, the control over the highways and public lamps of the City, the expense being paid out of the consolidated rates of the City?—That is so.

4054. In 1849, did the directors of the Central Gas Company apply to the Commissioners of Sewers for permission to lay down pipes in the City?—I do not know that of my own knowledge; but I have no doubt about it at all.

4055. Did they offer to you to execute a deed, by which they would bind themselves

themselves to supply gas to the consumers at a fixed price?—I have no doubt of that. I have examined our records, and I believe that to be so.

4056. Was it to supply gas at 4 *s.* per 1,000 cubic feet?—That is so.

4057. And further to reduce the charge to 3 *s.* 6 *d.* and 3 *s.* whenever they should pay a dividend of 10 per cent. to their proprietors?—I believe that is exactly so.

4058. Did the Commissioners of Sewers accept the offer; and at a meeting of the 7th December 1849, was a deed to that effect executed?

Mr. *Richards.*] This gentleman has said—really I believe he knows nothing at all about it.

Mr. *Hoggins.*] We have the deed here; I am going to prove this fact (*the deed was produced, and handed to Witness*).

4059. Did the two existing companies at Midsummer 1849, reduce their price?—That I cannot say of my own knowledge; I believe it was so, but I cannot say so of my own knowledge.

4060. In 1861, on the coming into operation of the Gas Act of 1860, did the three companies supplying the City raise the price of gas to 4 *s.* 6 *d.*?—They did.

4061. Then did the Commissioners take counsel's opinion as to the power of the Great Central Gas Company to raise the price?—We did.

4062. Subsequently a special case was stated for the opinion of the Court of Common Pleas, and was it the result that the Court of Common Pleas said that under the Act of 1860 the illuminating power was only 12 candles, and that they were entitled to charge for anything more?—The question I apprehend that went before the Court of Common Pleas, was the right of the Central Gas Company to come in under that Act; we considered they were bound by the deed with us; they considered they were entitled to come in under the Act, and that was the question raised before the Court of Common Pleas.

4063. Mr. Serjeant *Kinglake.*] And the Court held that they were within the Act?—The Court held that, and subsequently we went before the Exchequer Chamber, and that judgment was confirmed.

4064. *Chairman.*] Your contract was broken?—Yes, we had no alternative but to come in under the Act of 1860.

4065. Mr. *Hoggins.*] Was the judgment of the Court of Common Pleas upon the ground that the Act of 1860 only specified 12 candles, and that if you got a larger illuminating power you must pay for it?—I cannot speak to that from my own memory, but I believe that is so.

4066. In 1860, did the Great Central Gas Company, being then no longer restricted by their deed, raise the price?—Yes.

4067. How much?—Do you speak of public lamps?

4068. Yes?—They raised their price very materially; I think it went up to 5 *l.* 8 *s.* or 5 *l.* 9 *s.*; some years before it was only a moiety of that.

4069. Since the passing of the Act of 1860, have you had continual complaints and remonstrances respecting the lamps?—Very many.

4070. Are these all complaints (*producing a bundle of documents*)?—We have had a large number of complaints by memorial to the Commission, and also verbal complaints, made by members of the Commission from their respective Boards from time to time.

4071. Relating to public lamps?—Yes; and frequently from private consumers.

4072. Do the complaints still continue?—They continued until very lately; we have not had any very lately.

4073. Do you know of two attempts made to put the Act of 1860 in force?—There were two attempts.

4074. The first failed because the magistrate was a Commissioner of Sewers?—Yes.

4075. And the second was a technical objection, that the Clerk of the Commissioners was not the proper person in whose name to make the complaint?—I believe the decision in that case was upon that technical objection alone; but there were other technical objections as well.

4076. Have you ascertained that a higher price is charged for public lamps in the City than in other parts of the metropolis?—At the time we had the

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investigation of 1864-65 (I mean the Committee under the Commission of Sewers), we ascertained that to be so.

4077. To what extent?—I think a considerable extent; I cannot tell you exactly.

4078. In November 1865, was there a conference with the directors of the three gas companies supplying the City?—We had that conference.

4079. Was the conference held between the three gas companies and your own body?—Yes, that was so.

4080. What took place, and what was the result?—Our object in meeting them, and asking them to come and see us, was with the view of reducing the price of gas, which we thought very high, and we could find no justification for it according to our own views. We represented to them that, in the suburban districts, many of us being cognisant of the price of those neighbourhoods, we found we were charged as low as 3*s.* 4*d.* and 3*s.* 8*d.*, because I know, of my own knowledge, in my own neighbourhood, they were charging at that price. We brought that fact before them, and suggested that the charge they were making of 4*s.* 6*d.* was considerably beyond what we thought to be fair and reasonable, and we at that time were anxious they should reduce it, somewhat thinking they might reduce it perhaps to 4*s.* as a fair average price; but they left us with the feeling that they would not do that.

4081. This was in November 1865?—Quite so.

4082. Did you find upon that interview that there would be no chance of any reduction taking place?—Certainly,

Cross-examined by Mr. *Richards.*

4083. I understand at the time you held this conference you thought 4*s.* a fair price?—We should have been willing to have accepted that; I am not forming an opinion of the fair price of gas; I have never gone into that question.

4084. At that time you and those connected with you would have been willing to accept 4*s.* as a fair price?—Our complaint was they had gone up from 4*s.* to 4*s.* 6*d.*, and if they had not gone up to 4*s.* 6*d.*, probably the complaint would not have been made, if they had also given us pure gas and good illuminating power, which they did not do.

4085. And 4*s.* is the price now, is it not?—It is the price now.

4086. And I think you have received no complaints at present, or recently?—I think recently they have not been so numerous from the public, but if you mean to put it in that way, we are not satisfied as regards the purity of the gas, because we have weekly returns from our analyst which show us that there are complaints still existing.

4087. Mr. Haywood is asked, "Did it relapse into the old state of things?" He says. "No, I cannot say that it has ever relapsed." He seems to think that the gas is tolerably good as at present supplied?—If you ask my personal opinion, I think it has improved, but certainly not improved in the sense it ought to be.

4088. You think it has improved, and you think the price is now 4*s.*, which at that time, at any rate, you considered a fair price?—Taking other things into consideration; do not separate one from the other.

4089. You come and tell us that the Act of 1860 won't work, and cannot give an instance of the complaints that you made having failed?—I did not use the words "won't work."

4090. Those words have been used, but perhaps I was wrong in attributing them to you; I am taking now the complaints, not the special case; did you in the first instance go before a magistrate, who happened to be one of the Commissioners of Sewers, and therefore he declined to take any part in it?—Quite so.

4091. Now, on the second occasion, did you lay your information in the name of Mr. Dawes, the clerk, and was a technical objection taken on that ground?—No doubt Mr. Coleridge took that objection.

4092. Did you, finding that the technical objection was successful, lay your information in the proper name?—Certainly not; we took no further steps in the matter.

4093. There was nothing to prevent you, if you had any confidence in your case?—We did what we did in the exercise of our judgment. We considered that

that Act of 1860 to be eminently defective as regards the interests of the consumer, and on the consideration which we had of the question, when it was brought before us in various shapes, we found difficulties arise innumerable.

4094. And on the failure of that technical objection you did not lay further information in the proper names?—We did not, for this reason perhaps, amongst others, that we knew there were other objections intended to be taken which had been partially raised.

4095. Will you mention one?—That our body was not the proper body to take action upon it.

4096. That is very much the same as the Dawes objection?—No; Mr. Dawes was our clerk. We took proceedings in the name of Mr. Dawes, under our Act of Parliament.

4097. There is some proper body, I suppose, if you are not the proper body?—I should not like to say so, reading that Act of Parliament.

4098. You never have taken any further steps?—No, and I think we have exercised a very wise discretion; it would have been great waste of money if we had.

4099. Now I come to this other point; the Court of Common Pleas upon a special case determined that the Great Central Gas Company were justified in raising their price from 4*s*. to 4*s*. 6*d*.?—That is so.

4100. Are you aware that in the 36th section of the Act of 1860, it is expressly enacted that "All contracts made or existing before the first of January one thousand eight hundred and sixty, between any of the gas companies included in this Act, and any local authority, for or relating to the supply of gas, shall terminate on the first day of February one thousand eight hundred and sixty-two"?—I have no doubt it is so.

4101. The Great Central Gas Company raising their prices of gas, it was solemnly argued in the special case in the Court of Common Pleas, and decided against you?—No doubt.

4102. Now does it happen that the Act of 1860 imposed upon the Central Company the necessity of having an illuminating power equal to two additional candles beyond their private Act?—I think that is so.

4103. You may take it from me it is so, that is to say, they substituted sperm candles instead of wax candles?—I believe so.

4104. I believe you may take it that they give 14 candles?—You would not mislead me I am sure.

4105. You raised the question at law fairly, and it was decided against you?—Yes.

Re-examined by Mr. *Hoggins*.

4106. Did these gas companies offer at any time to meet you fairly upon the merits of any question, and so to try the question upon the merits?—Oh no; all kinds of questions were raised. There was another with regard to the 1,000 yards from the works. Numerous questions were raised which showed me that it was perfectly impracticable to work the Act.

4107. Mr. *Morrison*.] Are any of your body gas consumers?—I am a gas consumer, both in the City and at my private residence.

4108. Are you aware that any gas consumer may take these proceedings under the Act?—I am perfectly aware of that, but I should be very sorry to do it myself.

4109. If a gas consumer is placed in that position, could not one of your body take proceedings, and the Commissioners of Sewers pay the costs?—I dare say that could be so, but I do not think that would be the proper thing for us to do; I should not like to recommend it as chairman of that Commission.

4110. Mr. Alderman *Lusk*.] You are not the chairman of a gas company?—I am not.

4111. You are chairman of the Commissioners of Sewers?—I am.

4112. And you wished to come to reasonable terms with the companies, and tried to do anything that would be considered fair and reasonable with them?—We met upon the best of terms; our object in meeting was to come to some amicable arrangement.

4113. You thought 4*s*. was a fair price at that time?—I did not fix that as

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the value of gas, but we should have thought that fair under all the circumstances.

4114. Perhaps you did not know as much then as you do now?—Well, Sir, it is said we grow wiser every day; I suppose that is so.

4115. You desisted from going any further with the proceedings; looking at the Act of Parliament, looking at the trouble and expense, putting all these together, I suppose you thought it was no use to go further?—Quite so.

4116. That was really the case; the Act of Parliament you thought was no use?—Our opinion was that an Act of Parliament to serve both the consumer and the gas company would be a very different Act from that.

4117. You have had experience of Acts of Parliament; do you think the Act of 1860 needs putting to rights a little?—I think so; I said before it is eminently defective.

4118. Mr. *Paull.*] When you said "it was our opinion," do you mean it was the unprofessional opinion formed by the Commissioners or by the Council, or were you advised by the solicitors that the Act was so defective, and that you could not continue any proceedings?—We meet in committee; we have the aid of our officers, our clerk, our surveyor, and our solicitor, and it was from that combined communication that we attained that result.

4119. And your solicitor distinctly advised you under that Act you were not likely to obtain relief; did your legal adviser tell you so, because unprofessional gentlemen may form any opinion under the sun; they are not competent judges of an Act of Parliament; did your solicitor advise you so?—I believe he did; I am a professional man myself, and I came to that conclusion.

[Adjourned till Monday, at Twelve o'clock.

Monday, 7th May 1866.

MEMBERS PRESENT:

Mr. Dutton.
Mr. Hartley.
Mr. Serjeant Kinglake.
Mr. Alderman Lusk.
Mr. Morrison.
Sir John Ogilvy.
Mr. Paull.
Mr. Hastings Russell.
Mr. Staniland.
Sir John Trollope.
Mr. Woods.

SIR JOHN TROLLOPE, IN THE CHAIR.

Mr. *Cripps* produced the Returns asked for by the Committee; namely, the Financial Returns of each Company; the Return of the Price of Gas per 1,000 Feet charged to Private Consumers, without special arrangements, during the last Two Years; and a Return of the Total Amount charged to each Vestry or District Board, by each Company supplying Gas to the Metropolis for the last Two Years, with the Number of Lamps in each case. *Vide* Appendix.

Mr. *William Haywood*, called in; and Examined by Mr. *Webster*.

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4120. You gave us some general evidence on the illumination and want of purity, with reference to the report you made with Dr. Letheby, on a former occasion?—I did.

4121. Now we will go to the question of cost; has your attention been directed to the cost of the public lighting of the City?—It has.

4122. Has that increased very much of late years?—Very much indeed.

4123. What was paid in 1823?—Five guineas a light, for burners consuming five cubic feet per hour.

4124. What was the price of gas then?—15*s.* per 1,000 cubic feet.

4125. *Chairman.*] Where is this?—In the City of London.

4126. Mr. *Webster.*] What was the charge in 1827?—£. 4 14*s.* 6*d.*

4127. In 1832?—4*l.* 10*s.*, gas being then 12*s.* 6*d.* the 1,000 cubic feet.

4128. And 1845?—The lamps were then four guineas per annum, gas being then at 7*s.* the 1,000 cubic feet.

4129. Now, I believe up to that date, or previous to that rather, there was no competition in the City?—There had been no competition up to the year 1848, nor was there for some time after that.

4130. What happened in 1848?—The Great Central Gas Company was organised.

4131. When were their mains laid?—Their mains were completely laid about the end of 1850, or the beginning of 1851.

4132. Mr. Serjeant *Kinglake.*] What were the companies you had then supplying London?—There were two companies, the Chartered and the City of London, but they were each of them districted; there was no competition between the two, the lines of the district were as shown upon that plan (*handing a plan to the Committee*).

4133. *Chairman.*] Where is the Great Central?—The Great Central mains extend over the whole City, and directly their mains were laid, a competition ensued between the existing companies and themselves.

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4134. That is the Chartered and the City of London?—Yes; and, at the present moment, the Chartered still have their mains only within their own district; the City of London still only have mains within their own district, but the Great Central has mains over the whole district of the City.

4135. Mr. *Webster.*] It includes a part of the Chartered and the City of London?—It does; not entirely the whole area, because the Chartered there includes the district which is beyond the City of London; it is shown very accurately upon the map I have placed before you.

4136. In 1848 you had two companies districted and no competition, and your lights were four guineas, and the price of gas 7 *s.* per 1,000?—In 1848, it had fallen to that, because the Great Central Gas Company was organised, and threatened with competition, the gas companies reduced their price to 6 *s.*

4137. In 1851, had the mains of the Great Central been laid through the City?—They had.

4138. Did a reduction then take place?—The price of gas fell in 1850 to 4 *s.* the 1,000 cubic feet; in 1851, the Great Central Gas Company took the contract for lighting the lamps through the whole City, and reduced the price to 3 *l.* 17 *s.* 6 *d.* per lamp; they accompanied the tender at that time with a letter in which they stated they never intended to compete with the companies which were then supplying the public lamps at a loss to themselves, but that the price, which was 3 *l.* 17 *s.* 6 *d.*, would be a remunerative price to them; in fact, they said this, that it cost them only 1 *s.* 9 *d.* the 1,000 cubic feet delivered at the burner; that was in a letter sent in by the Great Central Gas Company to the Commissioners of Sewers on that occasion.

4139. Previously to 1860, was the price for public lamps reduced to 3 *l.* 3 *s.* by the Central?—In 1853, it fell down to three guineas per public lamp in the Great Central district; but in 1853 one of the companies, the Chartered, I think, obtained this district for public lighting again at the price of 2 *l.* 19 *s.* 6 *d.* per public lamp, so that in the year 1853 competition did this: it gave us half the City, or thereabouts, lighted at 2 *l.* 19 *s.* 6 *d.* per lamp, and the other half of the City at three guineas.

4140. How long did these two prices remain; three guineas charged by the Central, 2 *l.* 19 *s.* 6 *d.* by the Chartered Company?—Until the year 1856.

4141. In 1856, what did it become?—£. 4 2 *s.* and 4 *l.* 4 *s.* respectively.

4142. Now, we will come, if you please, to the year 1860; what was the price in 1860?—In 1860, the price was 4 *l.* 8 *s.* for the Chartered districts, and 4 *l.* 10 *s.* the Great Central.

4143. That was the year of the Metropolitan Act; in 1863, what was it?—It had risen in the Chartered district to 5 *l.* 9 *s.* 6 *d.* per lamp. In that year in the Great Central gas district there were only burners consuming three cubic feet of gas per hour; therefore, a comparison cannot be made; but for that three cubic feet per hour they had 3 *l.* 10 *s.* per lamp; whereas for those burning five cubic feet per hour, in the year 1854, they had only three guineas per lamp.

4144. Did those charges continue pretty much at that rate up to the beginning of the present year?—Yes; in 1865 the Chartered Company still had 5 *l.* 9 *s.* 6*d.* per lamp, and the Great Central had 5 *l.* 8 *s.* 6 *d.*; both of these two prices of course being much higher than they were in the year 1823, when gas was 15 *s.* the 1,000 cubic feet.

4145. Now, I believe you have prepared a table showing those different particulars, of which I have asked you a few?—I have; also a table showing the per centages of increase between the different years.

Vide Appendix.

4146. Has the state of things, as regards the supply of the public lamps, become materially worse during the last two years?—You mean as to the amount of light and the care with which the contracts are carried out?

4147. Yes?—Undoubtedly, but it has been improved as I told the Committee, I think, this last year; since the last meeting of the Committee I have had observations made of the quantities consumed at the public lamps, and, as is quite manifest to the naked eye, that the full contract quantity of gas is now being given.

4148. *Chairman.*] Since what period?—I think since the beginning of this year, but it was decidedly very much improved during last year. In fact they became better

better when it was known the whole of the lighting was being very strictly looked after.

4149. Sir *John Ogilvy.*] Then they are now faithfully performing their contract?—In respect of quantity; my observations made within the last few days show they are faithfully performing their contract in respect of quantity.

4150. Mr. *Webster.* I believe you had also prepared a table showing the number of the defective lights in different years?—That has been put in, but it has not been printed.

The *Chairman* said it was not necessary that that table should go on the notes.

Cross-examined by Mr. *Cripps.*

4151. Can you tell me if you were to take off the price of 5 *l.* 9 *s.* 6 *d.*, which you say is the present price, the cost of repairing the lamp, lighting and putting out, what the charge per thousand cubic feet would be, left for public lamps?—Deducing 15 *s.* per lamp, which is generally understood to be the cost of lighting, extinguishing, painting, repairing, and taking charge of the lamp, it would leave the gas at something like 4 *s.* 6 *d.* per thousand cubic feet.

4152. Will you undertake to say it would not be as little as 4 *s.* per thousand cubic feet?—I would not undertake to say that, but my impression is it is nearly 4 *s.* 6 *d.*; it is easily calculated; I make it 4 *s.* 6 *d.*, I see.

4153. Now, you tell us the price when the Great Central Company first of all laid on their mains to the public lamps; do you know whether there was any bargain made with them by the City authorities in the first instance, that if they would allow the mains to be laid they would supply at a cheap price to the public?—I know there was no such contract.

4154. At that time you say the private consumer was being charged 6 *s.*, in 1848?—Yes.

4155. I think 6 *s.* was the lowest price until the competition commenced?—Exactly.

4156. When the competition began, they reduced for a time to 4 *s.*?—They reduced to 5 *s.* in 1849, and then to 4 *s.*

4157. I suppose you know at that time, in point of fact, the public were paying to a great extent for the public lamps; the private consumer paid more, and the public lamps paid less?—I do not know that; it is not very easy to say that in the face of the letter addressed to the Commission by the company supplying the lamps at that price, to the effect that it was a remunerative price to them, and that the price of gas supplied at the public lamps only cost them 1 *s.* 9 *d.* a thousand cubic feet.

4158. Do you know what the Chartered were paying as dividend at that time?—I do not; I have no doubt it would be very much depreciated by this threatened competition.

4159. Now, since 1860, and the Metropolitan Gas Act, the price to be charged to the public has been directed by section 37 of that Act?—What is the nature of the section?

4160. "The gas company shall not charge a higher price by the one thousand cubic feet for gas supplied to any local authorities, than the lowest rate by the one thousand cubic feet from time to time charged by them to any private consumers, otherwise than by special contract in writing"?—I dare say they have not charged at a higher rate nominally, if they supplied the full quantity of gas; but measuring it by the quantity of gas they did give, I think they did charge a higher price.

4161. First of all, since 1860, the matter is legally regulated by the section; you are not prepared to say that the companies have in any way departed from the terms of that section?—Upon the assumption that they have given the full contract quantity of gas, I do not suppose they have.

4162. That is to say the matter has been regulated by this Act, and the Act has been observed by the companies?—They have not gone beyond their maximum; I am not at all clear that they have allowed themselves to be regulated by that quite in respect to the contracting, but if you ask me whether I think they have charged more than they are entitled to charge——

4163. I am asking you what you know?—I am prepared to believe they have not,

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not, assuming they have complied with their conditions of contract, which they have not complied with.

Re-examined by Mr. *Webster.*

4164. Have they in effect complied with the conditions of the contract?—They declined really to contract with the Commission, therefore I scarcely know what they mean by the term "contracting;" they said, "We will supply your lights almost on our own conditions." They said, "We want so much per lamp giving so much gas."

4165. I believe you have been unable to get your conditions complied with?—Oh, yes; all the proper conditions were not complied with.

4166. Although you told my learned friend that they have not in point of fact charged more than 4 *s.* 6 *d.*, has it cost the City more than that; have they had the full quantity of gas?—No, I say, for some years they have not.

4167. *Chairman.*] How can you tell; by looking at the flame?—The eye gets educated; those persons who are accustomed to look at a gas flame get their eyes educated very closely indeed.

4168. Can you, by your eye, tell the exact quantity of gas supplied to each lamp?—No; but you can tell whether the lamp is consuming five cubic feet or six cubic feet per hour; anybody accustomed to it, and having a well-educated eye, I think, could tell whether it was five or five-and-a-half cubic feet, assuming the burner to be in proper condition.

4169. You have no meters on those lamps?—There are meters fixed to certain lamps throughout the City; only a few of them.

4170. But it does not meter the whole quantity?—No, it only meters the quantities consumed in any particular lamp.

4171. Mr. *Cripps.*] May I ask whether he does not know that the meters have in each case shown a larger consumption than the contract?—I have explained that before, that all the metered lamps did; within a month after they were fixed some of them even registered during the day in a very extraordinary way.

4172. *Chairman.*] Then you place no dependence upon the meter for general purposes?—It was adopted, inasmuch as it gave a standard light, by which the others could be judged of; that was the object of putting the meter up; but whereas all the lamps were deficient in quantity of gas at that time, directly the meters were put on, excepting upon the occasions upon which I have already given evidence, the full quantity was given to the public lamps, but when moveable meters were taken and applied to other lamps, even in the same street, it was found those lamps were not consuming the proper quantity.

4173. You mean to say they were deficient in quantity generally?—Yes, except where meters were supplied; I have to state, with regard to the present time, that the full quantity of gas is being given throughout the lamps generally in the City; at the present moment the contract is being very liberally fulfilled, there is no doubt.

4174. Mr. *Webster.*] Is that deficiency in quantity such as, in your opinion, to raise the price practically to more than 4 *s.* 6 *d.*?—Yes.

4175. My learned friend asked whether, in point of fact, this price had not been regulated by this Gas Act; do you conceive that it has been properly regulated by the Gas Act?—I do not quite apprehend your question.

4176. My learned friend asked whether supply and price had not been regulated by the Metropolitan Gas Act; has it in effect been successfully regulated by that; in your opinion, is the Act a successful Act?—I do not think that the Act has at all satisfied what was expected from it with regard to the consumer, whether in public or private lamps.

4177. My learned friend asked you about this difference between 6 *d.* a thousand feet; how much does 6 *d.* per thousand cubic feet make over the consumption of the City?—In the City alone it means 25,000 *l.* a year.

4178. Mr. *Cripps.*] Is that for public or private lamps?—I am speaking of the whole consumption of the City; and the difference it has made in the City has therefore been 100,000 *l.* in the four years.

4179. Mr. *Webster.*] That is between the state of things now and when there was competition?—When there was competition.

4180. I understood you to say, in cases in which you had applied the meters, the gas had been found deficient?—Not at the present moment; but that at all

all those lamps to which meters were not permanently affixed, to which they were simply applied experimentally, from time to time, there was in nearly all cases a deficiency in the quantity of gas supplied until the beginning of last year, when the report of Dr. Letheby, and the great investigation which has been taking place from that time to the present, improved, undoubtedly, the gas supply to all the public lamps.

4181. Mr. *Paull.*] How came it about that, after the meters were placed, it was found the lamps consumed a greater quantity than the contract quantity?—Simply because the agents of the company turned the gas very fully on, and looked carefully to their burners, and insured that a full supply was given. It is within the power of any lamplighter to make the burner give the full quantity or less than the proper quantity.

4182. I mean to say, is not the suggestion that the servants of the company either wilfully abstained from turning on the tap as long as it ought to have been, or that when the meters were placed, they turned them on with the view of making it appear that more gas was consumed; do you mean that is a suggestion offered on behalf of the promoters as against the companies?—Of course, that is putting it in the very strongest possible way, but I do not know how I can avoid saying "yes" to it. It is so manifest, that if a number of lamps in the street are not consuming the contract quantity, when there are no means of measuring it at those lamps, and lamps upon which there are permanent meters to register the proper quantity, there must either be great care taken at that particular lamp or great negligence at the other lamps. It may be intentional, or it may be neglect, but that is very difficult to say, and it is very unpleasant to have to attribute an intention of evasion of a contract to a large company. Still, there are the facts, and in my opinion there was gross negligence in carrying out the contract, and the negligence was certainly not in favour of the public, but negligence in favour of a saving of gas, and anything that saves the gas saves the pocket of the company.

4183. Is there anything in the contract that any particular number of lamps shall be lighted within a given time?—Yes; I must tell you that there has been no contract since 1860, because they have repudiated all conditions of contract; they have lighted them, I suppose, at their own time, but in the previous years there were conditions as to the hours at which the gas was to be lighted. However, with regard to that, I believe it has been pretty fairly fulfilled.

4184. I do not mean the time that the lamps should burn, but the time within which a given number should be lighted; I want to go on with that, whether that might not account for what might be neglect, or appear to be neglect on the part of the lamplighter?—That might be the case, of course, if a man lighted half an hour later than he was by contract bound to light, and extinguish the light half an hour earlier than he ought to extinguish it; that, multiplied by the number of lamps, carried on throughout the year, would of course account for a less consumption being registered.

4185. What I mean is, whether the time which a lamplighter has to light a certain given number of lamps within is not so short that he is not able to bestow that care upon it which would enable him to see that each burner is turned up to its proper level?—Oh, no; I believe there is quite a sufficient number of lamplighters, because the complaints of the lamps not being lighted at the proper time have not been very numerous.

4186. But is there not some arrangement that 50 lamps are to be lighted within an hour?—No, that is not an arrangement with the contracting parties, between the Commission and the company; that does not exist as an arrangement; it may be a regulation of the gas companies themselves, but it was never a stipulation; all the stipulations in regard to times and lighting were, that they should be lighted before sunset, and extinguished just after sunrise.

4187. When you say that they will not come to any proper conditions, do you mean conditions proper in your view, or that they will not do what the Act of Parliament requires?—The Act of Parliament is perfectly silent upon the conditions of public lighting; it says that the company shall contract with the public boards having charge of the highways. When the original conditions of tender were placed before the companies in 1860, they at once declined to tender upon them, stating, "We tender under the Metropolis Gas Act."

4188. Mr. Alderman *Lusk.*] You are an officer of a public body and I want to ask you one or two questions as the representative of a class; which is the best

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best way for a public body to buy gas, by meter or by burner?—The only, if I may use the term, "mode" of arriving at absolute correctness is to burn by meter, undoubtedly.

4189. Do you remember the time of day when a great many private consumers used to consume by burner?—Yes, in the early days of gas lighting the persons had the privilege of burning gas in their houses at per burner.

4190. The gas companies do not approve of that mode now, I understand?—No; neither is it expedient.

4191. Do you know the reason why?—There is no means of ascertaining whether they are fairly treated or not.

4192. It was not a fair way of making the company supply?—No, the consumption of gas and all the circumstances attending gas are so materially altered since the time when persons were allowed to burn at per burner in their houses, that it is not applicable at the present day.

4193. The companies could not trust the public to do fairly by them?—No; I do not think they should be called upon to do so.

4194. Do you think it is a fair mode for the companies to insist upon burning in this way for public bodies?—I do not think it is in the streets; I do not think it is necessary to have meters, because they may be perfectly sure that no public body would dare to act unfairly to them with regard to public lighting; to begin with, they would have the means of ascertaining whether they were doing so or not, if they thought proper.

4195. *Chairman.*] The gas company supplying the gas, lights and puts out by their own officers?—They do.

4196. Therefore there can be no fraudulent use of gas?—There can be no fraudulent use of gas by the person who pays for it, which is the body having the charge of the lamps.

4197. They are all put out simultaneously and lighted simultaneously?—Very nearly; within half an hour

4198. Mr. Alderman *Lusk.*] Seeing that is the best way to prevent disputes, would it not be desirable to compel companies to light by meter to public bodies, if they thought necessary?—It would be the only way of arriving absolutely at a correct result, but the expense would be very considerable, and I do not think in the case of public lighting that it is at all necessary, because in the public lights they can apply an apparatus which cannot be well applied in the interior of a dwelling; that is to say, it could be applied in the interior of a dwelling, but it would be liable to be tampered with; there is an apparatus called the Regulator.

4199. Do you know any reason why you should not buy it by meter?—They are at liberty to buy it by meter if they like, but the conditions are onerous, on account of the expense; adding a meter to every public lamp, to say nothing of the first cost of suitable gas posts, means something like 2,000 cubic feet of gas consumed in the meter and looking after the meter.

4200. Then you think the conditions are impracticable?—Yes.

4201. Don't you think, looking at the matter, the public ought to receive gas by meter, if they please?—If they please they ought, undoubtedly.

4202. Do you see a reason why they should not?—No.

4203. Supposing a man who has a house opposite a lamp has a burner in his kitchen, one in his stable, one in his library, and one in some other office, would it be reasonable to ask him to put a meter to each of those lights?—No; neither would there be any necessity for it.

4204. Is there any reason why a company who have a commodity to sell, should not supply it in a fair way by meter, if asked to do so?—None.

4205. Do you think public companies should be compelled to supply by meter, whether to the parish vestry or the Corporation of London, if they are required to do so?—There certainly should be the power to compel the company to supply by meter.

4206. You are the representative of a public body; I asked that because you mentioned that the company would not contract with you in any shape, except under this present Act?—They said they tendered under the Metropolis Gas Act.

4207. Therefore, they were to do as they liked?—I think so, practically.

4208. As an engineer, do you think that gas works improve the neighbourhood where they are?—Oh no; they are objectionable in any neighbourhood; there

there cannot be a doubt about that; there cannot be a doubt that they are objectionable in any populous neighbourhood. Mr. *W. Haywood.* 7 May 1866.

4209. In respect to health, or what?—In respect to health and nuisance, and in respect of danger.

4210. Do they damage property as well?—Yes.

4211. Do you see any difficulty in taking gas five, six, or seven miles?—None; evidence will be laid before you to prove that that can be done; when the Bill is before Committee, evidence will be given to show you that that can be done; the Corporation propose to go seven miles away from the City.

4212. Mr. *Hartley.*] Do the companies object to the use of the meter?—No, the companies make no objection; they object to having any other mode of administering the light to public lamps by the agency of the Board having charge of the public lamps, except by a meter being placed to each public lamp, unless they themselves light and do what they like.

Mr. *George Wilson Stevenson*, called in; and Examined by Mr. *Webster*.

4213. You are an Engineer, having had considerable experience in gas companies both in London and in Halifax?—I have. Mr. *G. W. Stevenson.*

4214. I believe you are engineer for the Corporation of Halifax?—I have been for the last ten years.

4215. Have you been also manager of their works for some time?—For six years.

4216. How many years' experience have you had of gas?—I have been in practice on my own account nearly 20 years.

4217. Has your attention been called to the operation of the Metropolis Gas Act of 1860?—Yes.

4218. On the question of districting generally, if that is properly controlled, I suppose you have no objection to it?—I think that the districting of the companies in London was a necessity.

4219. Districting being a necessity, has the control been such as to protect the consumer?—No, I think not; I think that there were omissions in connection with the Metropolis Gas Act of 1860, which allowed anomalies to be introduced, which were not then thought of, or perhaps which it was not supposed at that time could arise, but which have arisen.

4220. Do I understand it is your opinion, Mr. Stevenson, that defects have occurred in the operation and working of that Act which might not have been anticipated?—I think so.

4221. First of all, as regards the Central Company, what were the proceedings of that company after the passing of the Act?—They raised their price from 4*s.* to 4*s.* 6*d.* as soon as they could do it.

4222. Previous to the Act, what were they supplying gas at?—Four shillings.

4223. And what illuminating power?—I think about 13½ sperm candles.

4224. Did that rise in price enable them to produce a very large sum of money?—It did.

4225. How was that appropriated?—In payment of the Parliamentary dividend of 10 per cent., permitted by the Gas Works Clauses Act, which was incorporated with the Metropolis Gas Act, and in payment of back dividends, and in payment of damages arising from the Wood-street fire, and in payment of compensation to Mr. Croll.

4226. After all that, was there a reserve fund?—Yes, I think there was a reserve fund, but I do not know to what extent.

4227. You say you do not know how much the reserve fund amounted to?—No, I do not.

4228. Now, I think you have prepared a table, have you not, from the returns as printed to the Secretary of State, showing the application of the funds of the Central Company?—I have.

4229. In 1861, have you a reserve fund there of 10,000 *l.*?—In 1861, there was 10,704 *l.* carried to reserve.

4230. And that shows a dividend of 10·72 per cent.?—Yes, a profit of 10·72 per cent. on the invested capital of 172,160 *l.*

4231. There having been that reserve fund in 1861, what was the dividend in 1862?—The profit, not dividend, was 15·13 upon an invested capital of 185,400 *l.*

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4232. There being in that year also a reserve fund of——?—£.8,551; that is part of the profit.

4233. Then, in 1863?—There is a profit of 14·98 on the same capital as in the year 1862.

4234. Which is 15 per cent.?—Fifteen per cent.

Vide Appendix.

4235. What was it in 1864?—17·76; 17¾ on the same capital.

4236. Have you examined the accounts of other companies with respect to other years?—With respect to 1864, only.

4237. I would ask you some questions as to the other companies, with regard to 1864; have they all paid their Parliamentary dividend?—I believe they have.

4238. Do they appear to have done so by their returns?—Yes.

4239. Do they appear to have made profit sufficient for it?—Yes.

4240. Did they also, after paying that, or reserving that, appear to have a considerable surplus?—Yes, most of them.

4241. How was the surplus of the Chartered Company disposed of?—The Chartered Company appropriated, in the year 1864, upwards of 8,000 *l.* towards making up the 10 per cent. dividends of previous years.

4242. What did the City do in 1864?—Carried nearly 4,000 *l.* to reserve. The Commercial Company paid 11,740 *l.* towards the arrears of dividends; the Equitable, 10,220 *l.* towards the same object; the Imperial Company carried 45,817 *l.* to reserve, being nearly four per cent. on the capital stock of the Company; the Independent Company, with gas at 4 *s.*, carried 28,000 *l.* to reserve, being about eight and a-half per cent. on their capital; and the London Company carried forward the small balance of 1,784 *l.*; the Phœnix had a surplus of 12,782 *l.* for arrears and reserve fund; the Ratcliff Company paid five per cent. on back dividends, in addition to the full dividend of the current year; and the South Metropolitan Company, which supplies gas at 3 *s.* 4 *d.*, carried over only about one and a-half per cent. surplus profit; the Surrey Consumers and Western Companies, which make up the list of metropolitan companies, each paid three and a-half per cent. towards the back dividend and reserve.

4243. *Chairman.*] It does not show how far back they carried their back dividends?—No, this does not show that.

4244. Nor how far back they went in their accounts?—They cannot pay back more than six years.

4245. Not by the Act of Parliament, but did they do more than that?—No, I do not mean to intimate that any of the companies have contravened the Act of Parliament.

4246. Mr. *Webster.*] Is the result of that to show that they have all been making large profits?—They have made large profits.

4247. And has one of the companies supplying the City made very extraordinary profits?—The Great Central Company have made very large profits indeed.

4248. Now, you are aware that by the Gas Act the price of gas is to be reduced when the companies are in a position to pay 10 per cent.; is the machinery at command such that that has been applied to these companies?—No, the Gas Works Clauses Act provides that when the company can pay 10 per cent., and have accumulated a reserve fund equal to 10 per cent. upon their capital, that they must then reduce the price of gas; but there are technical difficulties in the way of consumers enforcing that; for instance, there is no obligation upon the company to invest their reserve funds as they are required to do by the Act of Parliament; and nothing but an application to the Court of Chancery would compel a gas company to invest its reserve fund; and, until that reserve fund has been invested, the court of quarter sessions cannot compel the reduction in price; I consider that is a great blot in the Gas Works Clauses Act which is incorporated with the Metropolitan Gas Act.

4249. Mr. *Webster.*] Whatever may be the effect or otherwise of the Gas Clauses Act as matter of fact, has it been applied to cause this reduction in any case that you know of in the metropolitan district?—No, it has not. I know a case in the country where an application was made to the court of quarter sessions to get the price of gas reduced in consequence of the very large profits that the company made, and the application failed on technical grounds altogether.

4249*. As matter of fact, do the returns of the company show that there was legitimate scope for the application of the Act if it had been practically applicable?—There is no doubt about that.

4250. So far as you know, has it ever been applied?—No.

4251. Mr. *Cripps.*] What is the case to which you refer?—The case of Ashton, heard at the Salford Quarter Sessions in July last.

4252. Mr. *Webster.*] Whatever may be the cause of the failure, does it confirm the opinion you expressed of the impracticability of the Act?—Yes.

4253. And is it upon that you have given an opinion?—Yes.

4254. Now is it in your opinion necessary that there should be a particular sample of burner deposited?—I think that the illuminating power of the gas to be supplied in the metropolis having been first determined, the burner which is suitable for the proper development of that gas should be strictly defined by Act of Parliament and a sample of it deposited as in the case of Birmingham.

4255. Mr. Serjeant *Kinglake.*] That is in the Birmingham and Staffordshire Act of 1864?—Yes; I think a Birmingham burner is objectionable in one respect, and that is, that the gas is burned through steel; I think it ought to be burned through material that will not oxidize.

4256. Mr. *Webster.*] But is the principal point, requiring a particular burner to be deposited, a proper principle, in your opinion?—Quite so.

4257. Does the description of the Metropolitan Gas Act admit of burners being used which will show a difference of several candles in the way in which the gas is burned?—Oh, yes; I can select burners which will strictly conform to the Act of Parliament, and with the same gas get four, five, or six candles' difference of illuminating power; the fact is, one burner will destroy the illuminating power, and another develope it.

4258. Is it competent for the companies to select, within the limits of the Act, a burner that will be very beneficial in exhibiting the good properties of the illuminating power of their gas?—I think the companies ought to have the best burners they can get, because you cannot increase the illuminating power of gas; the gas has its illuminating power in itself inherently, and you may destroy it by a bad burner, but you cannot increase it by a good one; therefore, I think, first of all having decided what the illuminating power should be, then the burner should be defined which will suit that gas; I think the principle of the Argand burner, as applied to the testing of gas, is entirely wrong; it is not a burner in general use.

4259. There have been great improvements in burners lately, and, I believe, several recent Acts of Parliament have complied with the view you contend for?—Yes.

4260. One question about the price; what is your opinion as to the price in the Metropolitan Act?—I think the maximum price for 12 sperm candles gas 4 *s.* 6 *d.* a thousand feet is at the present time, I was going to say, absurdly high. It is very much too high. There has been this Session a most rigid inquiry, first before a Court of Referees and afterwards before a Committee of this House, into the cost of gas at Brighton; the cost of gas at Brighton must be greater than in London, including the expense of distribution and so on, and the Committee there have fixed 3 *s.* 9 *d.* per 1,000 feet as the maximum price. In the Bill of a competing company which they have authorised, and also in the Bill of an existing company which is now before Parliament, they have fixed 3 *s.* 9 *d.* as the maximum price for 14 sperm candles gas.

4261. *Chairman.*] That is two candles higher than London?—Yes.

4262. Were you personally concerned in that Bill?—Yes; I am engineer to the new company opposing the old company.

4263. You were going on to state your reasons why gas would be dearer in Brighton than in London; will you tell us why?—Brighton is a more scattered place.

4264. That would not be the sole reason?—That would not be the sole reason.

4265. Are not coals dearer than in London?—I do not think they are much dearer; it is a seaport.

4266. But you get them from Shoreham?—They have to be brought from Shoreham in one direction and from Hove in the other; I beg pardon, from Black Rock. There are two companies at the extremity of Brighton, the old company at the east end, and the Brighton and Hove Company at Hove, and

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they have to get their coals from Shoreham at the other end. Then the expenses of distribution are very considerable in Brighton.

4267. The coals for the works at Hove would be landed from two to three miles short of Shoreham, I believe?—They would be landed at the Aldrington Basin, that is between Hove and Shoreham.

4268. It would not be more than two or three miles?—It is not more than a mile or a mile and a half.

4269. Then, in fact, the distance the coals have to be carried to the Brighton New Works at Hove would not be further than to many of the gas works in London?—That is so, and an element of increased cost in the gas at Brighton is this: that the residual products at Brighton do not sell at nearly so much as they do in London; coke is lower in price; I think 2 *s.* a chaldron lower, if not 3 *s.*, and that is a very considerable element in the cost of gas.

4270. Now, with regard to this point, the only other point you made, why gas should cost more to make at Brighton than in London, is the fact that Brighton was a more straggling place. If you look at that map you will see many of the companies travel over greater distances than Brighton?—They do; but they have works suitable to their scattered districts; there is very much greater demand for gas in London than at Brighton; the consumption is only about 200 millions a year, whereas in the City of London alone it is 1,200 millions.

4271. But yet you can afford to set up a competing company?—Because the other company neglected its duty, and also the old company were seeking to enlarge their works very much at Hove, and the Committee decided that it was not to the interests of the people in the immediate neighbourhood of the works that the nuisance which already existed should be extended there; as it was necessary to invest a further capital for the supply of Brighton, I presume the Committee authorised a new company; I do not intend to interpret their reason.

4272. The Bill has passed?—Yes.

4273. Mr. *Paull.*] Are the new works at Brighton or Hove?—The new works will be erected at Aldrington, but they are for the supply of Brighton on the Hove side.

4274. Is not coal very much dearer at Hove than in Brighton?—Yes, it is; I think the town dues are either 1 *s.* 10 *d.* or 2 *s.* 2*d.*, and of course that would prohibit a gas company from erecting works in Brighton.

4275. So that the coal is very much dearer in Brighton than in Hove, by reason of the dues, and also the great length of carriage?—By reason of the dues principally.

4276. Do you know the difference between the ordinary price of coal burned by private consumers in London, and that burned at Brighton?—No, I do not know.

4277. Mr. *Webster.*] Do you say the maximum price for the gas in Brighton as settled by the Committee is 3 *s.* 9 *d.* for 14-candle gas?—I beg your pardon; it was 3 *s.* 6 *d.*, I have been misstating it; it was 3 *s.* 6 *d.* for 14-candle gas, but the Corporation have power to give, I think, six months' notice to increase the illuminating power to 15 sperm candles, and then the price is to be 3 *s.* 9 *d.*

4278. *Chairman.*] An increase of 3*d.* in price, if they go up one candle more?—Yes.

4279. Mr. *Webster.*] If the Corporation should require one candle more, the company would get 3 *s.* 9 *d.* per 1,000 cubic feet?—Yes.

4280. Now, one question about this very scattered district; notwithstanding the different characters of the districts of the metropolis, do you find one of the companies supplying a very scattered district, pays a very high dividend, and carries a very large amount forward?—The South Metropolitan Company supply gas at 3 *s.* 4 *d.*, over a very scattered district; their boundary is coterminous with the Phœnix Company, who have been supplying gas during the same time at 4 *s.* 6 *d.*, a difference of 14 *d.* in price; the South Metropolitan Company have been paying their full dividend and supplying gas at 3 *s.* 4 *d.*

4281. *Chairman.*] The honourable Member on my left wishes to know whether it is proposed by the Brighton Bill to district that town the same as is done in London?—No; it leaves the three companies to compete with each other.

4282. There are three companies?—There are two already existing, and the Bill of a new company has passed.

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4283. So that you will have three companies breaking up the streets?—The corporation of Brighton have inserted very stringent clauses, or rather the Committee have inserted very stringent clauses upon the petition of the corporation of Brighton, with respect to the opening of the streets during the Brighton season; the companies will not be permitted to open the streets during the Brighton season, except for emergency.

4284. Brighton, I think, has no paved streets?—Very few; they are nearly all macadamised.

Mr. *Webster.*] You will find by the return of the Brighton Company to Parliament that the coals there are 17 *s.*, 16 *s.* 10 *d.*, 21 *s.*, 19 *s.*, and 18 *s.* per ton.

Chairman.] Then they are higher on the whole than in London.

4285. Mr. Serjeant *Kinglake.*] What coal is it that is ordinarily used at Brighton?—Newcastle coal.

4286. If you are to increase the gas in quality by one candle, you will be obliged to use some other coal?—We shall be obliged to use 10 per cent. of cannel to make 14 sperm candle gas at 100 yards away from the works.

4287. *Chairman.*] The question of the learned Serjeant means this: you would increase the quantity of cannel coal to give 15 candles?—No doubt.

4288. To the extent of a certain per-centage more?—It would cost the company about one penny to 3*d.* per 1,000 feet more to make 15-candle gas than 14-candle gas.

4289. It will pay them better to give the better quality?—No doubt.

4290. Mr. *Webster.*] What is the period by the Metropolitan Act during which they can supply back dividends?—Six years.

4291. Is that a very long period?—It is the longest period for the payment of back dividends in any special Acts of Parliament; there is no limitation in the Gas Clauses Act.

4292. What is the period of the South Metropolitan Act of 1842?—That limits the period to three years.

4293. And the Scarborough?—The Scarborough Act of 1859 limits it to three years. In Streetford, a small adjunct of Manchester, an Act passed in 1862 limited the period to three years, and in Reading an Act passed in 1862 limited the period to two years; in the Exeter Gas Act of last Session the company were prohibited from paying any back dividends at all.

4294. Is the operation of the Metropolis Gas Act, in that respect, much harder on consumers than in other places?—Than in any other place; in fact, the illuminating power of the gas is below the average. In London, the price is above the average, and the limitation of back dividends is more favourable to the companies than it is in any other place.

4295. *Chairman.*] I think the witness sums up the whole question?—It really is so.

4296. Mr. *Webster.*] One question on another topic; is there a great difference in price on the two sides of the street?—Yes; all along that line the price has been 4 *s.* 6 *d.* on one side and 3 *s.* 4 *d.* on the other.

4297. That is only an imaginary line; it is only a line on paper?—Consumers of gas do not know anything about it, except that one man pays 4 *s.* 6 *d.* and his neighbour is having his gas at 3 *s.* 4 *d.* It gives rise to a great deal of ill-feeling, and the man that is paying 4 *s.* 6 *d.* is debarred by Act of Parliament from getting precisely the same article at 14 *d.* 1,000 feet less: if competition existed that would be impossible.

4298. Does it not appear to you that the quantity of the coal converted into gas is a proper standard of reference?—You mean with regard to the capital of a company. The business of a gas company is to turn coal into gas, and sell it; therefore the ton of coal is a very fair standard to take as a unit from which the estimate of what the capital of a company should be.

4299. Now, taking a ton of coal as the unit to estimate a capital, do you find great discrepancies in the London companies?—I do; and that is, I think, the point which was omitted in 1860, when London was districted; the omission to consider the relative capitals.

4300. To what extent do you find that variance exists?—I find the capital of the company that has the smallest amount of capital is equal to about 4·35,

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and the highest to 8·59 for every ton of coal they distil; the average of the whole is 6·26; it shows that the capitals of the London companies vary to the extent of nearly 100 per cent.

4301. Do you think the public ought to be protected, whatever may be the cause from which companies may be burdened with excessive capital?—I think, from whatever cause it may happen that a company have an excess of capital, the public ought not to suffer; if a company has a capital very much in excess of what it ought to have, then the dividend upon that capital ought to be limited to what would realise 10 per cent. upon a fair amount of capital, if 10 per cent. is to be the proper dividend payable upon gas capital.

4302. *Chairman.*] All you say is the capital should be limited to a given principal, and where excessive should be abated?—I would not abate the capital; I would abate the dividend; I would ascertain what the true amount of capital ought to be; I would give a very liberal amount of capital, but I would ascertain what it ought to be per ton of coal carbonised.

4303. By the consumption of coal?—That is for the work done; and having ascertained that, I would pay 10 per cent. upon that capital, and wherever a company's capital is in excess of the sum defined, I would reduce the dividend to such a degree that it would only pay 10 per cent. upon a proper capital.

4304. How would you ascertain the quantities of coal used by each company?—I would take their own returns.

4305. And you would regulate the dividends by that return?—Yes.

4306. And if the capital is in excess of that you would limit the dividend?—I think a capital should be satisfied by a smaller dividend in such a case.

4307. You would have a floating variable dividend then, from year to year;—The companies are in Parliament very frequently, and they subject themselves afresh to Parliamentary legislation; if there was anything unjust, anything operating unjustly, it would be open to them at any time to come and get the amount of the dividend revised.

4308. You are proposing an Act for the regulation of the whole of them?—I am; I look upon the supply of the gas of the metropolis as really being in the hands of one company, for there is no competition, and there ought to be some equality in the price, and that can only be obtained in the present state of things by regulating the dividends.

4309. Mr. *Webster*] You would consider it right to ascertain the proper amount of capital, for the carbonisation of a ton of coal, for instance?—Yes.

4310. That is one element?—Yes.

4311. Is another element the proper amount of capital for the purification and distribution?—I would include everything.

4312. Of course the capital for the purification and distribution might be influenced by the character of the district?—Yes.

4313. At all events, do you conceive that the capital ought to be considered with reference to the cost of the manufacture of a ton of coal into gas?—You see, you do not want capital, you want floating capital for the purification, and that forms part of the capital of the company.

4314. *Chairman.*] I presume you mean to say this: that the companies, or some of them, have an excess of capital because the interest of 10 per cent. tempts them to enlarge their capital with the view of that good investment; is that what you mean?—I have not imputed that at all.

4315. Your evidence tends that way?—I did not mean it; I do not mean to cast any reflection upon them.

4316. Mr. *Denison.*] They cannot enlarge their capital without the consent of Parliament, and we do not get 10 per cent. in any case hardly on new capital; I think we may; for the last two or three years we have never got above $7\frac{1}{2}$ per cent. for new capital, but Parliament has always left the old capital alone?—I do not mean to impute any wrong-doing to the companies; but there have been causes which have occasioned some of the London companies to have at the present time a very excessive capital.

4317. Mr. *Webster.*] Then would your first step be to ascertain the proper amount of capital for the manufacture of a ton of coal into gas under existing circumstances?—Yes.

4318. Then to apply the dividend of 10 per cent. upon that?—It would.

4319. That being ascertained in that way, would that be a check on the anomalies

anomalies of the districting system?—Yes, it would; it would practically prevent one company from charging more than another for gas.

4320. Of course, if you can have competition that may be itself a check?—Yes.

4321. But if you are not to have competition must you have some principle, in your opinion, applied of the kind you now indicate?—That is so.

4322. Mr. *Dutton.*] I want merely to ask how you propose to deal with any contingencies that arise like the Wood-street fire, which cost the company a great sum of money. In your estimate of capital you must put by a certain sum of money to meet contingencies?—That is not a question of capital at all; that was an act of gross carelessness; no question about it; it happened, but there is no doubt it was a question of gross carelessness, or the company would not have been cast in 25,000 *l.* damages; my opinion is, that it ought to have been paid out of the 10 per cent.; it might have been spread over a course of years.

4323. *Chairman.*] How many years did they spread it over?—I think it has been spread over five years; there is one more instalment to pay in July.

4324. Then they paid themselves 10 per cent., besides paying these damages?—They have.

4325. Then, in fact, the public have paid these damages?—The public have paid all the damages and all the compensation to Mr. Croll, besides the current dividend and the back dividends; it is a premium for carelessness.

Cross-examined by Mr. *Cripps.*

4326. The process you would desire to have applied to gas companies would apply equally, would it not, to all other joint stock companies?—I have not considered it with regard to other joint stock companies.

4327. You would consider what a railway would probably be constructed for, at the present day, from London to Birmingham, and that should be the capital of the London and North Western?—Oh, no.

4328. Then I may take it you do not assent to that?—Understand me; I do not intend you to understand that I would ascertain what these gas works could be constructed for in the present day, and fix that as the capital; I have a much more liberal plan.

4329. You are to take one single test of proper capital, that is the cost of manufacturing a ton of coal into gas?—I would make that a unit, at all events.

4330. Taking that as your sole test, you would ignore the fact, would you not, altogether of the cost of establishing a company in one place being more than it would be to establish it in another?—I look upon the metropolis as being really supplied by one company.

4331. That is not an answer to my question?—It is, incidentally; they have willingly districted themselves, confined themselves within certain limits, and avoided competition, and they must be viewed as one company; the question is what is the proper capital for the supply of the metropolis.

4332. Just assume an existing state of things, that they are different companies, would not their capital be different according to the different cost it has been to each to establish their gas works in the different places?—Oh, yes, it would.

4333. And all that difference of cost would be ignored, if the sole test of capital were to be taken as the cost of manufacture?—I would not ignore it at all; I would inquire into each individual cost, and settle what the proper amount of capital ought to be for that company in proportion to the amount of work they are doing.

4334. You could not then get the capitals of companies equal?—I do not expect you will get them equal, because there will always be companies who will have a capital below the average, and you cannot go and raise their capital.

4335. You are aware, are you not, that the cost of the land on which works would be erected would be very different in different parts of the metropolis?—I will admit at once that no two works would cost the same.

The *Chairman* said the questions about the capital that ought to be employed by a gas company was foreign to their inquiry; what they wished to know was how it had been applied.

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4336. Mr. *Cripps.*] Just one word about Brighton and the Brighton Company's gas; you have given us the cost of coal supplied to Brighton, that is the cost of coal not to the new, but to the existing companies?—I did not give you the cost of coal.

4337. You gave us the price of gas as fixed by a new Bill which has gone through one House of Parliament this Session?—As fixed by two Bills, the Bill of an existing company as well as the Bill of a competing company; that must in future be the price of gas in Brighton.

4338. Up to this time do not you know the price of gas in Brighton has been 4*s.* 6*d.* and 4*s.*?—I know at the present time it is 4*s.*, and until a year ago it was 5*s.*; I know the company has been making enormous profits.

4339. What you are speaking of now is not an existing state of things, but something contained in a Bill of this Session not yet tested?—That is so.

4340. That Bill which has just gone through the House of Commons?—What I tell you is this, that an inquiry has been made by the Court of Referees into the cost price of gas at Brighton and the proper selling price, and that inquiry, of course, was based on the working of the Brighton and Hove Company; and the Court of Referees recommended, and the Committee acting upon their recommendation, inserted 3*s.* 6*d.* in the Bill as the maximum selling price for gas at Brighton to pay 10 per cent. upon capital.

4341. That is in a Bill of this Session, and has not actually been tested at Brighton at all?—But I tell you the accounts of the existing companies show that 3*s.* 6*d.* will pay the proper dividend upon their capital.

4342. Is it not the fact that that 3*s.* 6*d.* occurs in a Bill which has yet to become law, and which is not the state of things at Brighton at present?—It is not the state of things at present.

4343. The price of coal you gave us was the price of coal at Brighton at present?—I know nothing about the price of coal.

4344. Do you know where the works of the new company are?—Close to the Aldrington Harbour.

4345. Do you know anything at all what the price of land at Brighton is on which the works are erected?—1,000£. an acre.

4346. Do you mean that is the price where they are down at Aldrington?—£. 1,000 an acre.

4347. Do you mean that evidence was given before the Committee?—You asked me if I knew the price of land.

4348. I asked you the price of land where the gas works are?—The price is 1,000*l.* an acre.

4349. At Shoreham Harbour?—The promoters have agreed to give 1,000*l.* an acre; the Brighton and Hove Company, in seeking to extend their Hove works, had absolutely contracted to give 1,400*l.* an acre.

4350. And they were not allowed to extend their works, the Committee sanctioned the new company instead?—Yes.

4351. Now about the Central Gas Company; you say their price was 4*s.* and they raised it to 4*s.* 6*d.*?—Yes.

4352. In the interval between the raising it from 4*s.* to 4*s.* 6*d.*, the Metropolis Gas Act had passed?—Yes.

4353. Did that Act impose upon them a higher illuminating power than they were bound to give before?—Yes, it did; they were absolutely supplying gas of an illuminating power equal to that prescribed in the Act of 1860, when they were only charging 4*s.*

4354. I am quite aware of that; they were obliged in the interval to increase their illuminating power by Act of Parliament?—I deny that.

4355. Are they subjected to penalties under that Act of Parliament, if they do not keep up the certain purity and power?—Yes.

4356. After they had raised their price to 4*s.* 6*d.*, the matter was referred to the Common Pleas to know whether they had power to do so?—Yes.

4357. And decided in their favour?—Yes, they were within the metropolitan district.

4358. And did the Court state that they were under the Act of Parliament, and were bound under the Act of Parliament to raise their light and observe the conditions of the Act?—I do not impute the slightest wrong-doing to the companies; what I say is the Act is defective.

4359. Can

4359. Can you answer my question?—Oh, yes; they were bound to charge 4 *s.* 6 *d.*; they were bound to give 12 sperm candles.

4360. In the year 1864, they applied a very considerable portion of their profits in the payment of back dividends?—Yes.

4361. In some other years also?—I am only giving 1864.

4362. Under the General Gas Act, they would have been entitled, would they not, to go on applying their dividends for back profits for an unlimited length of time?—Yes, under the Gas Works Clauses Act.

4363. But, for the passing of the Metropolitan Gas Act, that which took place in 1864, the application of their dividends to the back profits might have gone on for a considerable number of years?—Yes, there was no limit in the Gas Works Clauses Act.

4364. Is it by the operation of the Metropolis Gas Act, that they will not be able to go on applying the dividends as they did in 1864, for more than six years, after paying 10 per cent?—No, they cannot pay back dividends more than six years.

4365. Then has the public, by reason of the Metropolis Gas Act, got the benefit of those extra profits at an earlier time than they would have done but for the passing of that Act?—Yes.

4366. That is the operation of the Metropolis Gas Act?—Yes.

4367. With regard to the case at Ashton, how far did that go under the provisions of the Gas Clauses Act; at what stage was anything done definitely in that case?—The company had not invested their Reserve Fund.

4368. At what stage of the proceedings directed by the 35th section of the Gas Clauses Act, was it that the inquiry was found inoperative?—The company were summoned before the Salford quarter sessions, to reduce the price of their gas.

4369. What had taken place, according to the provisions of this Act, when they were summoned?—I can give you all the particulars.

The *Chairman* stated it was not necessary to pursue the cross-examination on that subject.

Re-examined by Mr. *Webster*.

4370. You told my friend that the public would get the benefit of the extra profit at an earlier period; you are not here, I think, to impute motives to the companies in their proceedings?—I do not impute any wrong motive nor any wrong proceedings to any of the companies. What I say is, that the Act of Parliament is defective, not that the companies have contravened the Act.

4371. Does the Act of Parliament afford adequate motives to companies to practice economy?—No, I think it does not.

4372. Is that the general objection that you make to the Act in that respect?—Yes.

4373. You said that the metropolis must be viewed as one company?—Yes.

4374. I understand you to say in your estimate of the capital that ought to be applied, you would take things as they are?—I would take things as they are, not an imaginary state of things.

4375. Not including what may have been expended in former years, whether discreetly or indiscreetly?—I would endeavour to ascertain what is the proper capital to be employed for the work done; and, having ascertained that, I would guarantee that capital 10 per cent. dividend.

4376. Having reference to the peculiar circumstances of each case, you would ascertain the proper capital to be applied for the work done, and then give it 10 per cent. dividend?—Quite so.

4377. My friend asked you whether that principle would not apply to all companies. I apprehend that competition is practicable in most other companies?—Yes, there is competition between London and Birmingham.

4378. Where competition is practicable, this control is, I apprehend, unnecessary?—Quite unnecessary.

4379. But where competition is impracticable, some control of this sort is necessary?—Yes.

4380. Mr. *Paull.*] With reference to the return which you presented, purporting to be a statement of the profits and their appropriation, what is the balance

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balance for shareholders' profits in 1864; is that gross or nett profit; is the balance of 47,429 *l.* available for dividend?—It would be, after the deduction of 21,440 *l.*, the balance from last year.

4381. What is that balance from last year; is it profit brought over, undivided profit?—It is undivided profit, brought over: it consists of reserved fund, 6,072 *l.*; revenue account, 1,972 *l.*; and dividend account, 13,395 *l.*; making a total of 21,440 *l.*; those are the items.

4382. Do you mean to say that that 21,440 *l.* was appropriated for the payments of 1863?—No, it is the balance brought forward from 1863 into the revenue account of 1864; the balance brought forward on the credit side.

4383. That is carried over to the account of 1865?—No, carried over to the account of 1864.

4384. Then why deduct it?—I have deducted it, because we have a gross balance here of 47,429 *l.*; I most deduct it, in order to ascertain the nett balance; first of all it is put into the 47,429 *l.*, and then it must be deducted.

4385. The undivided profit of 1863 is included in what you call the balance of shareholders' profit, 47,429 *l.*?—It is so.

4386. Then that is to be deducted?—Yes.

4387. As to the appropriation of 32,929 *l.*, you told me the other day that there were arrears of dividend, amounting to 11,871 *l.* 15 *s.*, chargeable in 1864?—My evidence was struck out altogether.

4388. I want to see how that money has been appropriated?—The company paid 10 per cent. on their capital stock of 185,400 *l.*, that is, 18,540 *l.*, they paid arrears of dividend 11,871 *l.* 15 *s.*, and they carried a balance to the next year's account of 17,017 *l.* 4 *s.* which I think you will find makes up the 47,429 *l.*

4389. But having provided for the arrears of dividend, and for the 10 per cent. upon the profits of the year, they only carried over 2,518 *l.* without counting the undivided profits of 1863; 10 per cent. is 18,540 *l.*, and the arrears of dividend 11,871 *l.* making 30,411 *l.*, leaving a balance to be carried forward of absolute profits for 1864, 2,518 *l.*?—That would be deducting 17,017 *l.* from 21,440 *l.*

4390. It would be deducting the 21,440 *l.* which was brought forward?—I have taken their own statement; I have not endeavoured to ascertain whether it is accurate or not; I have taken their own figures, and supposed them to be accurate.

4391. By the way in which you have made out this statement of profits, you make it appear that the balance for shareholders' profits made in 1864 amounts to 47,429 *l.*?—Less 21,440 *l.*

4392. From that you deduct what was brought forward from the preceding year, which was 21,440 *l.*, which leaves you only ——?—£32,929.

4393. And after providing for the Wood-street fire, &c.?—Yes.

4394. That leaves unappropriated dividend 32,929 *l.*?—Yes.

4395. The charge upon that is 18,540 *l.* for the 10 per cent., and 11,871 *l.* in respect of the arrears of dividend; if this purports to be an accurate statement of profits and their appropriation, it does not seem to me that it shows it, what you carry over of the actual profits of 1864 is 2,518 *l.*?—You mean to say that we ought to show an absolute profit in eachyear of £47,429.

4396. You have made it appear by this account that that was the profit, whereas it was no such thing, because you had to deduct what you brought over from the preceding year?—I deducted that before I ascertained the profits; I have made the deduction of 21,440 *l.* from the gross amount.

4397. Then you will have 32,929 *l.*?—Yes.

4398. How is that appropriated?—I have not investigated that.

4399. Is not that the most important part of it all?—I do not think it necessary to investigate that.

4400. That was the question I asked you when you were in the chair and which led to the withdrawal of the evidence?—I have not done that in any case; I have not shown how they have appropriated any of their profits; the returns I have given are the nett profits made in each year; but I have not endeavoured to ascertain from their accounts how they appropriated them.

4401. This purports to be a statement of profits and their appropriation in each of the years, but in fact it is not so?—No, it does not profess to be a statement of

of their appropriation; there is a balance, and I cannot say how the balance is appropriated; I can say how it is all appropriated except the balance.

4402. Mr. *Morrison.*] Will you add up the headings of the reserve fund in this paper, and tell me what they amount to; the total amount of the reserve fund in all the four years?—I make the amount 25,955 *l.*

4403. The total capital is 185,000 *l.*; that is considerably more than 10 per cent. upon the capital?—The whole of this would not be invested, it would be for the payment of back dividends.

4404. Mr. *Cripps.*] I understand that that is only the reserve fund in each year; they are not added together?—It would be a floating reserve fund.

4405. Mr. *Morrison.*] Are you aware whether the gas companies claim to have a right to pay interest upon the back dividends, as well as the arrears of back dividends themselves?—I think not.

4406. I mean, supposing a certain amount of interest to be due upon the arrears, whether they pay those back dividends with compound interest?—No.

4407. Can you explain what is meant by capitalised profit, which appears in any of the accounts?—Yes; a company spends money upon the capital account, that is, upon the extension of works, out of profits, and then comes to Parliament, and Parliament sanctions the capitalisation of those profits, and they are made to bear 5 per cent. dividend; very rarely more than 5 per cent.

4408. Take one company, for example, the Independent, which starts with a capital of 120,000 *l.*; it adds to its capital 30,000 *l.*, as capitalised profits under the authority of Parliament, on which they are entitled to pay 5 per cent. dividend; and, according to their returns handed in, as moved for by Mr. Moor, they paid 10 per cent. upon the whole 150,000 *l.* of capital?—I have not noticed that.

4409. Mr. *Hartley.*] What do you consider a fair and reasonable price for gas in London, giving a profit to the gas companies; and what illuminating power would you recommend in London?—Fourteen sperm candles.

4410. And what would be a fair price for that?—There has not been a special Act of Parliament passed for years giving less than 14 candles.

4411. What would you recommend as the illuminating power in London?—Fourteen sperm candles.

4412. What is a fair and reasonable price for a company to get a proper remuneration?—Three shillings as a maximum.

4413. *Chairman.*] You think they can give 14 sperm candles for 3 *s.*?—Yes.

4414. Mr. *Hartley.*] Would that afford 10 per cent. dividend?—It would give a fair dividend upon a proper amount of capital.

4415. Upon the present amount of capital?—No, I do not think it would.

4416. What price should they charge to get 10 per cent. upon their present capital?—From 3 *s.* 4 *d.* to 3 *s.* 6 *d.*

4417. Mr. Alderman *Lusk.*] I think you said that you thought the districting system was a necessity in London?—I think so, in London.

4418. You think that the capitals of some of the companies in London are excessive?—Very excessive.

4419. Do you think that 10 per cent. should be guaranteed to every company, whatever its capital is?—No; I think wherever a company has an excess of capital, they ought to be satisfied with less dividend.

4420. If a company accepts the advantages of the districting system, should it not also accept the disadvantages?—I think that is obvious; if companies accept the advantages of the districting system (and no doubt it is an immense advantage to them), they ought to be willing to put themselves under very strict Parliamentary control.

4421. You think they ought not to talk about distance from the port where the coals come from—the port of London, for instance, two or three miles—and that they ought not to talk about very severe restrictions put upon them?—I think not.

4422. I believe Brighton has agreed to light at 3 *s.* 6 *d.*?—Yes, giving 14 sperm candles.

4423. Do I understand that they are allowed 10 per cent. for profit?—That allows 10 per cent. for profit.

4424. And coal is as dear there as it is here?—It is dearer, and the residual

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products are worth less, so that the cost of the raw material is considerably greater in Brighton than here.

4425. One reason, I suppose, is that it is a small port, and small vessels only can go there?—Comparatively small.

4426. With regard to a ton of coal being a fair unit, do you say that there should be some proportion between the capital of a company and the amount of gas produced?—Yes; between the amount of the capital and the amount of work done.

4427. Is that really a practical thing that can be tested?—Perfectly so; engineers know precisely what the capital of a company ought to be per million feet of make, or, in other words, per ton of coal used.

4428. It is practicable to bring that into operation?—Quite so.

4429. As the present companies are situated, there is no inducement to them to reduce the price of gas to the public?—I do not see that they have any; there is no possibility of competition.

4430. Whenever they have above 10 per cent. profit, what is to be done with the surplus?—Whenever they have more than 10 per cent. profit and get their reserve fund full, getting it properly invested, they must reduce the price of gas.

4431. Or go to law, or something of that sort?—Yes.

4432. Or extend their works?—I would not impute any improper motives.

4433. They must do something with the money?—Yes, or reduce the price.

4434. What becomes of the interest on the reserve fund?—That I do not know.

4435. Do you know if the reserve fund is really invested at all?—I have no means of knowing that; I do not know whether any one of the companies in London has got its reserve fund properly invested.

4436. It seems to be rather dangerous to have a reserve fund at all, properly speaking?—To have it properly invested.

4437. It is rather dangerous?—There are plenty of ways of evading the Gas Works Clauses Act; that Act is incorporated with the Metropolis Gas Act, under which those companies work, and there are plenty of ways of evading it; the companies know them too well, and take advantage of them.

4438. The companies have no motive for reducing the price of gas?—None.

4439. In reference to the Wood-street fire, you say that was gross careless ness?—No doubt.

4440. Of course the company was cast in that way?—Yes.

4441. And if we are to pay for things of that sort, it is a premium upon bad management and carelessness?—There is no inducement to carefulness in the present state of things.

4442. Do you know anything about the dispute with Mr. Croll?—Mr. Croll supplied gas of a higher illuminating power than he was bound by contract to supply, and when his contract with the company terminated, he sued them for that excess of illuminating power, and was awarded a great many thousand pounds.

4443. It was a dispute between themselves?—Between the company and their contractor.

4444. And the public have had to pay for it?—Yes.

4445. Do you think it fair that a printer, for instance, now that there are steam engines employed, is entitled to charge the same price that he might have done 50 years ago?—No, nor five years ago; machinery has much improved in the meantime; there is a competition in all those things.

4446. Do you think it fair to pay for foolish bargains that gas companies may have made 30 years ago?—No.

4447. Mr. Serjeant *Kinglake.*] With respect to this table of 1861, as to the Central Gas Company, you have this item, "Reserve Fund, 10,704 *l.*;" do I understand that that was a sum applied to the reserve fund in that year?—Yes.

4448. Do you know what fund there was then in existence in addition to that?—I do not know.

4449. Might there be a large sum in addition to that?—I cannot tell at all; I have no means of knowing.

4450. Your returns do not show the existing reserve fund in any particular year,

year, only the particular sum which is paid into the account of the reserve fund?—Out of profits.

4451. Then there may be a large sum in addition to the sum paid in each particular year?—I cannot tell what reserve the companies have.

4452. Whether it is invested, or what has become of it?—No, not at all.

4453. In the next year, 1862, there is a reserve fund, 8,551 *l.*, that is paid in that year in the same way?—Yes.

4454. And so throughout the table?—Yes.

4455. There is a large balance carried on each year which afterwards you deduct?—Yes.

4456. Do you know whether there are any arrears of dividend still due during those years?—The Great Central Company have now paid up all their arrears of dividend.

4457. That is not what I ask: I mean, taking any one of those years, if there were arrears of dividend which they were entitled to pay out of profits, why do they not carry on the balance, why not clear it off at once?—I cannot tell; I do know that they have cleared off all the arrears.

4458. You say that in many of these metropolitan companies there is a great excess of capital in your opinion?—Yes.

4459. Can you specify the companies?—Yes.

4460. What are the companies you complain of as having a large excess of capital?—The Phœnix Company has a very large capital indeed; it is equal to 8·59 *l.* for every ton of coal carbonised. The London Company is the next, having a capital of 7·67 *l.* The City of London is the next, 7·45 *l.* The next is the Equitable, 7·32 *l.* All those companies are above the average. The average of the London companies is 6·26 *l.*

4461. Can you give an opinion as to what is the proportion which the capital ought to bear to a ton of coal?—I should take each company separately on its own merits. I cannot tell without due investigation of the peculiar circumstances under which each company is working. I think the result ought to be ascertained in each case.

4462. Mr. *Morrison.*] To whom is the ordinary interest of 5 per cent. upon capitalised profits paid?—To the shareholders.

4463. Then that raises their dividend very considerably above the 10 per cent. which is authorised by Act of Parliament?—If they had not increased their works out of profits, and then capitalised those profits at 5 per cent, they would have had to subscribe capital, which would have borne 10 per cent. Therefore it is rather advantageous than otherwise to consumers that the companies should extend their works with capital which bears 5 per cent. I do not see any objection to that. If the works are legitimately extended out of capitalised profits which bear only 5 per cent., the consumers do not suffer.

4464. But it really puts more money into the pockets of the shareholders to the extent of that dividend?—Yes, to that extent.

4465. *Chairman.*] Do you know any companies that produce gas as low as 4 *l.* and 5 *l.* per ton of coal?—Yes.

4466. Which are they?—There is one of the London companies.

4467. I am referring to the London companies?—The Independent Company has a capital of 4·35 *l.* for every ton of coal used.

4468. Is that the lowest?—Yes; the next is the South Metropolitan, 4·74 *l.*

4469. Then the fact is that these companies vary 100 per cent., ranging between 4 and 8?—They do.

4470. Mr. *Burke.*] Has not the Independent the most concentrated supply in London, and therefore requiring less capital, and are they not now in such a position that they must enlarge their works to increase their supply?—They have a very closely built district; their works are at Haggerstone, and they have a very compact and desirable little property there now; but I instanced in connection with the Independent, the South Metropolitan, and that is by no means a compact little district like the Independent, yet the capital approaches closely to that of the Independent.

4471. The South Metropolitan probably is not yet built over?—A good deal of it is not.

4472. It is straggling property?—It is straggling, and their mains run over a great distance for the population they have to supply.

4473. Mr. *Hartley.*] To make that complete, we should have the amount of

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capital in the mains, and the amount of receipts per acre or per mile, or something of that kind; because we may have a concentrated supply, without any capital at all, involved after you have the works, or you may have a capital of three or four times the value of the works?—Each of the companies might supply the mileage of the mains, and then we should know the receipts upon the mileage.

4474. And we ought to have the number of customers, how many are under 500,000, and how many are over, and so on?—Yes.

4475. Mr. *Webster.*] Is the district of the Independent as concentrated as that of the City?—No.

4476. *Chairman.*] They are a different class of buildings?—Quite so.

4477. Mr. *Webster.*] But the City is much more concentrated?—Yes.

4478. *Chairman.*] Is not the Independent rather a poor district in London?—Yes.

4479. And in a poor district the consumption of gas will not be equal to a more wealthy district like the City, though the population may be equally concentrated, or more so?—That is so.

4480. The consumption of gas would be unquestionably larger in the richer district, would it not?—Very much more so.

4481. Mr. *Webster.*] You stated, in answer to an Honourable Member, that the City could supply gas at 3 *s.* 6 *d.*, of 14-candle illuminating power?—Yes.

4482. Did you assume that they were to pay 10 per cent. dividend?—Yes, for 3 *s.* 6 *d.*

4483. But if the rate of interest on the capital was 5 per cent., could they supply 18-candle gas?—I really do not know.

4484. Mr. *Staniland.*] You have given answers to questions in regard to the motives of companies in reducing their price under the existing law; putting those motives aside for the moment, what has been the fact; have they reduced the price, or kept it where it was before the Gas Act of 1860?—I think I have not imputed any improper motives.

4485. You have been asked whether there was any motive to induce them to reduce the price, and you have said "No"?—There is no motive.

4486. Putting the motives aside, what has been the fact; have they reduced?—Some of the companies have reduced.

4487. How many have not?—I am not sure.

4488. How many out of the 13?—I am not sure whether nearly all have not reduced since Christmas.

4489. You think that all have reduced?—I do not think all.

4490. What is the exception?—I do not know whether all have; I think not; I am not sure of the exceptions.

4491. Have they not generally reduced 6 *d.*, and, in one or two instances, more than that?—Yes, since Christmas.

4492. The result of your evidence or opinion appears to be, that the price of gas should be regulated in reference to 10 per cent. dividend on the capital, not as it is, but as it ought to be?—Yes, on the proper amount of capital.

4493. I put the case as to people who have bought property in these companies since the passing of the Act of 1860; the result of your evidence or your opinion is, that a certain portion of their capital ought to be confiscated in favour of what you call the public?—I would not confiscate the capital.

4494. You would reduce the dividend?—Yes.

4495. What do you call that but confiscation of capital?—It would be a hardship upon them, there is no doubt.

4496. That would be the effect of your suggestion?—It would be so.

4497. You have talked about a ton of coal representing what ought to be the capital in these particular companies?—No; I say that a ton of coal is a convenient unit to take on the assumption that the capital of the company should represent to some extent the amount of work done by the company.

4498. I think you said it was conclusive that the cost of a manufactured ton of coal ought to represent the capital of a company?—With regard to a new company, it should be absolute; with regard to an existing company, I have already said that I think the circumstances of each company should be investigated.

4499. If you were beginning a company at this moment, you would begin with

with all the improvements that have taken place in the course of manufacturing; if you take a company that has been in existence 40 or 50 years, you have a large capital in consequence of a variety of circumstances?—Many of them very improper; companies have been in the habit, and are still, of making renewals but of capital if they build works upon leasehold ground where they know they will have to remove, instead of putting by a sinking fund which will reproduce the cost of the works.

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4500. That is a peculiar case; you would not, in reference to existing companies, take a ton of coal as your guide?—Not conclusively, by any means.

Mr. *James Bell,* called in; and Examined by Mr. *Hoggins.*

Mr. *James Bell.*

4501. Are you Solicitor to the West London Junction Gas Company?—I am.

4502. Did the Great Western Railway some years ago let to a Mr. Vaughan a piece of ground at Wormwood Scrubs?—Yes.

4503. To build gas works upon?—They did.

4504. And he supplied the company and the hotel with gas?—He never supplied the hotel, but he contracted to supply the company.

4505. Was a contract afterwards entered into between the railway company and Mr. Vaughan, to supply gas to the company for 21 years?—Yes.

4506. From January 1859 at 2 *s.* 10½ *d.* for every 1,000 cubic feet?—Yes.

4507. *Chairman.*] How many years ago was that entered into?—In 1859.

4508. Mr. *Hoggins.*] Was there a company subsequently formed to take the business of Mr. Vaughan?—A company was formed at that time, or as near about it as I can recollect, to take the contract from Mr. Vaughan.

4509. On the passing of the Metropolis Gas Act of 1860, did the Imperial Gas Company interpose?—No; they did not interpose, I think, until the end of 1864, or the beginning of 1865; I have come here unexpectedly, and I have not the dates with me. I do not know when they filed the Bill; they let it rest four years before they took any proceedings.

4510. Against whom did they take proceedings?—Against the Great Western Railway Company and the gas company I represent.

4511. What was the object?—It was to restrain the gas company from supplying gas.

4512. Mr. *Burke.*] Was it so?—As far as I can recollect, to restrain the company from supplying gas to the railway and the Great Western Hotel.

4513. Mr. *Hoggins.*] Did you under the contract, of which you have spoken, supply to the Great Western Company above 30 millions of cubic feet of gas?—About that, as nearly as I can recollect.

4514. *Chairman.*] Per annum?—Per annum.

4515. Mr. *Hoggins.*] Did that contract yield a considerable profit to the contractors?—Yes; it did yield a considerable profit.

Cross-examined by Mr. *Burke.*

4516. You say that the Imperial Gas Company sought to restrain you from supplying gas; did the Company ever try to prevent you supplying gas to the Great Western Railway Company?—I cannot recollect the prayer of the Bill.

4517. You say that for four years no steps were taken, will you state that the Bill was filed to prevent your Company supplying gas to the Great Western?—Yes, as far as I can recollect the prayer of the Bill; I have not lately referred to it; they have delayed the matter so long, that I have not looked at the Bill for a year and a half, and I cannot recollect the exact prayer of the Bill.

4518. You have not seen the Bill before coming here?—I was here and happened to hear that I was summoned, but I have no papers to refresh my memory.

4519. *Chairman.*] You can tell us the result; did they go into Court with you?—Not at present, we have been forcing them; we have given them notice.

4520. Mr. *Burke.*] After supplying the Great Western Railway Company for years without any interference on the part of the Imperial Company, did you not seek to invade the district assigned to them by the Metropolis Gas Act, and then did they not try to restrain you from doing that?—The hotel never had gas from us

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us at all, but the original contract was to supply the hotel, and we did no more in the year 1864 than was done in 1860.

4521. Did you not propose to supply the Metropolitan Railway Company with gas?—No, we did not; we supplied only the Great Western Railway; we only knew the Great Western Railway Company in any of our contracts; whether the Great Western Company supplied the Metropolitan Railway we cannot say.

4522. Were you not in negotiations with the Metropolitan Railway Company, when they came to the Great Western Railway, to supply their carriages with gas?—We were not; the gas company had nothing to do with the Metropolitan Railway Company.

4523. You say you never supplied the Great Western Hotel?—Never.

4524. Were you willing to supply gas at 2*s.* 10½ *d.*?—We were perfectly willing, and had the contract.

4525. Was the Great Western Company willing to take it from you?—It was simply that our company was in so weak a state that we could not supply them; we were willing if we could; we can supply them now.

4526. You say that you made a profit out of this contract?—Yes.

4527. In the first place, did you get the land for nothing upon which you built your works?—We got about an acre for nothing; that might have cost us about 300 *l.*

4528. Have you contracted with the Great Western Railway Company that they shall always take coke from you at a given price?—No, we sell it to the public.

4529. Do they bring all your coals for you?—No, they do not; we have a contract with the Ruabon Coal Company to supply us with coal.

4530. Is not that company formed of the officers of the Great Western Railway, and having their works on the Great Western line?—I do not know anything of the Ruabon Company.

4531. Are they paid for the gas that passes through the meter on the works of the company?—Yes, we have a meter on at the works, and they have a meter at their end of the line to check us.

4532. So that the company pay for all the gas that passes through the meter on your works?—That is so, but their meter and ours check one another; there is never any variation to any considerable amount.

4533. What is the length of the mains between the two?—I think a mile and three-quarters, or two miles; I will not be sure about the length.

4534. They paying for all the gas that passes through the meter in your own works, and incurring the risk of leakage?—Yes.

4535. You incur no loss by leakage or bad debts?—There is no risk of bad debts.

4536. And the main is only a mile and a half?—I will not say; it may be three miles; I have not refreshed my memory.

4537. You have no risk from bad debts or from accidents?—Yes, we have lost a great deal by accidents.

4538. I mean accidents in supplying; you simply contract to supply and to deliver at the Great Western Company's works?—Yes.

4539. They incur the risk of accident in their own works?—I do not precisely know what accidents you mean.

4540. Do you know that companies supplying the streets of London, having many customers, are subject constantly to claims for accidents arising from deficiency at their works?—If an accident takes place at our works, we have to remedy it at our own cost.

4541. You have probably heard that one company had to pay 25,000 *l.* damages?—We have not had anything of that kind occurring.

4542. You are in the position that you had your land supplied to you, and you incur no bad debts, no loss from leakage, and you have no collectors, inspectors, directors, or any staff of that kind?—Yes, we have directors.

4543. And you charge 2*s.* 10½ *d.*; what dividend have you paid?—I can tell you the profits that we make.

4544. Tell me the dividend?—I cannot tell you, because we have been paying our debts out of the profits.

4545. Have you ever paid a dividend?—Yes, I think, 3 per cent. on the ordinary capital; our profits were, for the half year ending 30th June 1865, 1,263 *l.*

1,263 *l.* 1 *s.* 8 *d.*; that, on 20,000 *l.* capital, would, of course, more than pay 10 per cent.

4546. You have been in operation five years; what dividends have you ever paid?—I should have to go into a long explanation to tell you why a dividend was not paid.

4547. *Chairman.*] Have you paid a dividend at all, and, if so, to what amount?—We have 520 shares representing a capital of 5,200 *l.*, on which there is a preference dividend of 6 per cent.; that we have always paid.

4548. Mr. *Burke.*] That is about 300 *l.* a year?—Rather more; then we have 596 shares representing in round numbers 6,000 ordinary shares, on which in 1865, the first year that we earned any profits, we paid a dividend of 3 per cent; then I should say that we have had to pay 400 *l.* a year to our managers, but that contract ends this year, we only took 159 *l.* to pay 3 per cent; under the old contract with the managers, we were labouring under great disadvantages, owing to the Great Western Railway Company interfering with our works, and insisting on our employing a man as manager, who did not understand gas at all; when we got rid of him, we entered into a contract with some fresh men who thoroughly understood the business, and we paid them 400 *l.* a year, and that took half the profits away; now that contract is at an end.

4549. Is it within your knowledge that, notwithstanding these great advantages, the Great Western Company have been recently negotiating with the Imperial Company to supply them with gas instead of you?—That I am not aware of; if they supply them, they will have to pay us off, which they can do at the end of 14 years; I should be very glad to hear it.

4550. What proportion does your capital bear to the quantity of gas that you supply?—Unfortunately our capital is larger than it ought to be, owing to the interference of the Great Western Company with our works and other circumstances; it is 20,000 *l.* altogether; we have spent 20,000 *l.*, and we supply about 30 million cubic feet of gas a year.

4551. How much per ton of coal is that?—I cannot tell.

4552. Do you know how much gas you make?—We make out of the Ruabon coal about 10,000 cubic feet per ton.

4553. Is it only Ruabon coal that you use?—This year there was a strike at the collieries, and the Ruabon Company could not supply us with such good coal; then our product rather fell.

4554. Are you under any limitation as to illuminating power and purity?—Yes; the test of the Metropolitan Gas Act governs us.

4555. That is 12 sperm candles?—Yes.

4556. Who tests the gas?—They are very strict with us; the engineers of the Great Western Railway Company test it.

4557. Mr. *Hartley.*] What is the total quantity of gas you make?—In 1865 we made about 30 million feet.

4558. You said you supplied the Great Western Company with 30 million feet?—We only supply the Great Western Company.

4559. Do all the mains and service pipes belong to the gas company or to the Great Western Company?—They belong to the company, we paid for the mains up to the station.

4560. And all the service pipes through the station?—I think most of them belong to the Great Western Company; we only paid for the mains up to the station.

4561. You have no capital involved in the distribution of the gas, having only one customer?—None at all.

Re-examined by Mr. *Hoggins.*

4562. Has there ever been any dispute between your company and the Great Western, as to the quantity of gas supplied or have the quantities always agreed?—There has been no difference.

4563. The quantity by meter?—There has never been any dispute at all.

4564. Has the Bill to which you referred been filed by the Imperial Company?—Yes.

4565. How long ago is it since the Imperial Company filed that Bill?—About two years ago.

4566. They having filed that Bill, was an answer put in?—Yes.

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4567. Then no further steps were taken?—It slept for a long time.

4568. The next step would have to be taken by the Imperial, but they did not take any step and the matter slept?—They never took any step.

4569. You have taken a step to push them on?—Yes.

4570. Mr. Alderman *Lusk.*] You say that you can make, at your works which are not far from London, gas at 2 *s.* 10½ *d.* per 1,000 feet?—Yes.

4571. And you are ready to contract to supply it at that price to the Great Western Railway Company?—We would contract to supply anyone at that price.

4572. Would that leave you a fair profit on your capital?—We have often gone into calculations, and have found that if we had spent a proper amount on those works, 2*s.* 10½*d.* would have given nearly 30 per cent. profit.

4573. You are an instance of what gas can be produced in London for, notwithstanding all disadvantages?—Yes; I do not know whether we get any benefit by our coal contract; we pay 17 *s.* a ton.

4574. If your land was cheap, you have a considerable distance to take the pipes?—We had a long way to take the pipes; I do not know how long; I think it is somewhere about a mile and three-quarters.

4575. The Great Western Company check your meter with their meter?—Yes.

4576. And there is no loss in the distance?—No appreciable loss; we have never had any dispute or question about it.

4577. Mr. *Hoggins.*] Have you pipes for the distribution of the gas in the same manner as other companies?—Exactly so.

4578. Mr. *Hartley.*] I understood not?—We supply the mains up to the station.

4579. You have one main up to the station?—Two, I think.

4580. But the distribution through the station is theirs?—I believe, when the Imperial supplied the Great Western it was the same; those belong to the Great Western Railway Company.

4581. Mr. Alderman *Lusk.*] With regard to accidents happening, have you ever heard of any accident for which the companies have had to pay?—I have often heard of accidents happening; but I have no personal knowledge on the subject.

4582. Did you ever hear of any one except that in Wood-street?—I cannot say.

4583. Have you heard them constantly spoken of?—No.

4584. You never had any yourselves?—No.

4585. You are not afraid of any?—No.

4586. Has the gas company pretty good control in protecting themselves from bad debts?—I know, from my dealings with gas companies, that it is very difficult to get out of paying them; they threaten to cut off the gas, if they do not do it.

4587. Have not proceedings been taken by the Imperial Company against you lately?—Two years ago; and, as far as my impression goes, that was to restrain us from supplying, not only the Metropolitan Railway, but, I believe, to restrain us entirely.

4588. Do you not expect that they will buy you up by and by altogether?—I wish they would.

4589. Have any overtures been made?—There have been overtures made between us.

4590. Mr. *Dutton.*] Would you make them purchase at the basis of 30 per cent.?—If they purchase at all, we shall not sell except on the basis of paying us out as we are.

4591. Mr. *Burke.*] You have been anxious to sell the works?—Of course, because we have given a great deal too much for them.

4592. Mr. *Paull.*] Did you not say that an answer was put in to the Bill?—We put in an answer.

4593. I understand you to say that you do not recollect what the contents of the Bill were?—I cannot recollect the prayer of the Bill; ours is a very small company, and it was in existence before the Metropolis Gas Act; I cannot recollect the precise prayer of the Bill; whether it was to restrain us *in toto*, or whether it was only to restrain us from supplying the Great Western Hotel and the Metropolitan Railway.

Mr. *John Romans*, called in; and Examined by Mr. *Hoggins*.

4594. ARE you a Gas Engineer in general practice residing at Edinburgh?—I am.

4595. Are you agent for the sale of the Marquis of Lothian's cannel coal?—Yes.

4596. And lessee of several gas works?—Yes.

4597. Are you prepared to enter into a contract to supply as much of the Marquis of Lothian's cannel coal to the Corporation of London as they may require?—Yes.

4598. For the manufacture of gas?—Yes.

4599. And the price, to be delivered into the Pool, is 35 *s.* per ton?—Yes.

4600. This cannel will yield 12,500 cubic feet of gas per ton?—Yes.

4601. And the illuminating power is equal to 33 sperm candles?—Yes; the exact illumination is almost 34. It is 33·8, giving 12,573 cubic feet to the ton.

4602. Are you acquainted with the manufacture of gas on a large scale?—I am.

4603. Do you believe from estimates that you have made, that 3 *s.* per 1,000 feet would be a fair price in the City of London for gas of 18 candles' illuminating power?—It is a fair price, if the dividend is to be restricted to 6 per cent.

4604. If it is to be extended to 10 per cent., what do you say?—3 *s.* 6 *d.*

4605. Have you taken the illuminating power of gas supplied by the Edinburgh Gas Company for the last three years?—I have.

4606. I believe the result is an average for that time of 29·51 candles for a consumption of five feet per hour?—It is.

4607. You have a monthly average, I believe, which you can put in?—I have. I gave it to the Corporation agent the other day. It has been taken four or five or six times a month for the last three years. I have also the arithmetical workings out which every gas engineer is acquainted with. Thinking they might be required, I brought them here with me for the last three years. *Vide* Appendix.

4608. Is that calculation correct?—That is correct; 29½ standard sperm candles is the result; and I may intimate to the Committee that the manager of the Edinburgh Gas Company and myself sometimes get at variance about it; I happen to reside more than two miles from where the gas is manufactured, and he always makes more illuminating power than I do; he maintains that his gas is never, morning, noon, or night, below 30 candles; I have letters with me that I have received from him, finding fault with me for stating that his gas was below 30 candles; it is rare with him to have it under 32 candles, according to his photometrical observations.

4609. I believe the price of gas in Edinburgh is 4 *s.* 4 *d.*?—Yes; I have my last account here to show it.

4610. And they pay 10 per cent.?—Yes; and they allow 10 per cent. discount to large consumers; I do not happen to be a large consumer, so I do not get it; I do not know how high you must be to get the discount; my last account was 5,400 feet for three months.

4611. I believe that gas of 29·35-candle illuminating power, at 4 *s.* 4 *d.* per 1,000, is equal to gas of 18-candle illuminating power, at 2 *s.* 7½ *d.* per 1,000?—I must acknowledge I have not worked that out; I am not prepared to answer the question.

4612. What is the price of lighting the lamps?—I obtained the statement from the Inspector of Police at Edinburgh, the other day; the cost per annum of each lamp, 3,926 hours, with a straight jet, is 15 *s.*; with a fish-tail burner, 30 *s.* per annum; the jet consumes about 1 foot per hour, at 3½ inches long; the fish-tail about 2½ feet per hour; the entire plant, including columns, service pipes and fittings, and lamps, is the property of, and is kept in repair by the Corporation of Edinburgh; the Corporation also light, extinguish, and clean the lamps; each lamplighter has 125 lamps; he extinguishes one-third at 12 o'clock at midnight; his wages are 16 *s.* 6 *d.* a week; but on that very day, that is last Saturday week, there was a meeting of the lighting committee, to consider a petition of the lamplighters to have their wages raised to 18 *s.*; the number of lamps of all sorts in Edinburgh is 6,000, and they are supplied with gas by the

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Edinburgh Gas Light Company; the cost of keeping in repair and painting is about 2*s.* per lamp, per annum; that is executed by the lamplighters during the summer at the expense of the Corporation.

Cross-examined by Mr. *Burke.*

4613. You are not the engineer of the gas company?—No.

4614. Have you ever been engineer to any gas company?—Yes.

4615. Which was that?—I was engineer and secretary to the Davenport Gas Company for 12 years.

4616. Do you know anything of Scotch Gas Companies beyond what you have mentioned?—I am in practice on my own account, and I am consulting engineer for a number of Scotch Gas Companies.

4617. Do you know Glasgow?—I do; but I do not know about the gas there.

4618. Should you be surprised to hear that in 1862 an Act of Parliament was passed, called "The Glasgow Company's Act," giving an illuminating power of 16 candles, and the price to private consumers, 7*s.*?—I did not know that.

4619. And that in 1865 the Glasgow Suburb Gas Company's Act was passed with no restriction?—I do not know anything about it.

4620. This cannel coal of the Marquis of Lothian's is what they call boghead coal?—No.

4621. You propose to sell it at 35*s.* a ton in the Pool at London?—I should be very happy to get the order.

4622. What is it?—It is called the Lothian cannel, and according to analysis we consider it to compare with the Duke of Hamilton's cannel.

4623. You have offered it?—Yes.

4624. And you do not find many willing to buy it at that price?—Not so many as I should like; I have a contract with a coal broker just now in London for supplying a few thousand tons.

4625. But the gas companies have not bought any?—No; I must acknowledge that, with a few exceptions, they have not; the Independent have patronized it.

4626. How long since?—Last summer.

4627. How much have they ordered?—One cargo.

4628. Being an able agent, you have not failed to make known the merits of the Lothian cannel in London?—I am sorry I have not succeeded with your own company.

4629. Is there any sulphur in your coal?—I can give you the result upon the analysis of the ablest chemist in the University of Edinburgh, Dr. Stephenson M'Adam; but, as a gas engineer, I never had any difficulty in getting sulphur—with me it is only a question of lime; the sulphur is stated in this analysis to be only ·092 per cent.

4630. That is taken from a prospectus which you sent out to sell the Lothian coal?—The gentleman who made that analysis is no puffer.

4631. Is this a paper that you sent round as a puff?—I sent it to the gas companies, but not as a puff.

4632. At all events, it is an indication to them that you have the coal to sell?—Yes.

4633. Is the gas supplied at Edinburgh subject to any control by municipal or other authorities?—I am not aware that there is any paid official to test it.

4634. Is there any test instituted to ascertain the amount of impurity?—We have the impression at Edinburgh that the moment there is an extra amount of sulphur or ammonia in the gas, that there are so many eyes and noses open to detect it that the gas company must attend to it.

4635. There is a good deal of sulphur in Edinburgh occasionally for the noses to smell, is there not?—I have not been able to find sulphur in the gas in the ordinary way.

4636. What process do you adopt for purifying?—I do not make it.

4637. Do you not know what process is adopted?—I believe it is only lime; I do not think that the oxide of iron has found its way into Scotland at all.

4638. You state that your test of illuminating power is lower than the test at the gas works?—Yes; I have no personal knowledge of how they test it at the

gas

gas company's offices, but this I know, that when I have, as a consumer, found the gas below 30 candles, I have written to the manager about it, and he has sent me a reply, that according to their test the gas was of a certain illuminating power, higher than my calculation. Mr. *John Romans*, 7 May 1866.

4639. Do you find that gas in travelling does not lose its illuminating power? —I am inclined to think it does.

4640. How do you account then for your evidence that, tested in Edinburgh, they find a higher illuminating power than your test?—Because I am a mile or a mile and a half from their works where the manager tests it.

4641. What is the price of coal in Edinburgh?—We supply these people at 22 *s.* 6 *d.* at the pit's mouth; they have their own waggons, and they have a contract with the railway company; their waggons go right into the retort-houses off the main line; we have nothing at all to do with that.

4642. *Chairman.*] Is the stratum of coal in Lord Lothian's pit inexhaustible, or is it limited in quantity?—It is presumable that it will go on for many generations.

4643. Is there more than one stratum?—Geologically speaking, we expect when we go down 23 fathoms, we shall find the parrot again.

4644. Do you supply other towns besides Edinburgh?—Yes.

4645. What towns do you supply?—Partially Aberdeen, and Perth almost exclusively, I believe.

4646. Have you any knowledge of the results of lighting these towns; the illuminating powers?—They use a portion of cheaper cannel; there is a much cheaper cannel to be had with less illuminating power; I believe that the Edinburgh gas is the best in Great Britain. Looking at the Glasgow gas, I find ours is much superior to that.

4647. Do they mix the cannel coal in Edinburgh with any other coal?—They do; they use not more than 15,000 tons a-year from us; they have cheaper coal from Lord Elphinstone and the Duke of Buccleuch, for which they pay about half the money, and they consequently do not get the illuminating power that our cannel gives.

4648. Are the different species of the same kind of coal; are they all cannel? —All cannel.

4649. Not ordinary common coal?—No.

Re-examined by Mr. *Hoggins.*

4650. You said, in answer to my friend, that you had not received any order from "Your Company"; what company is that?—I hope Mr. Burke will not be offended; I meant the Imperial Gas Company; permit me to qualify my statement. Their secretary has told me, on every occasion, that they have a contract with some parties at Wigan, and that they are not able to give me an order; it has not been because they do not believe in the quality of the article; but they have a contract at Wigan, which has prevented them.

4651. Is this your calculation (*handing a paper to the Witness*): "Gas of 29·51 candles' illuminating power, at 4 *s.* 4 *d.* per 1,000, is equal to gas of 18 candles at 2 *s.* 7½ *d.* per 1,000;" is that right?—Yes; quite so.

4652. Mr. *Lusk.*] You mentioned that you had entered into a contract with the Corporation of London for any quantity of this cannel coal of the Marquis of Lothian's: for how many years would you enter into a contract?—I should not like to bind myself to 35 *s.*, because, as in all commercial transactions, if there is a great demand, the price may go up a shilling or two; but this I am prepared to say, that, as far as we know geologically, the cannel is, practically speaking, inexhaustible, the same as any other coal.

4653. You have no faith in the predictions that are made?—In Sir William Armstrong's prophecy, I have not.

4654. Do you believe that coal will be exhausted in a few years?—No; it is only a question of dipping down a little deeper; I firmly believe from my own experience as a mining engineer—for I do a little in that way occasionally—that we have coal underneath the whole estuary of the Firth of Forth and the Firth of Clyde that has never been touched.

4655. You would enter into any reasonable contract, and expect to be able to supply any reasonable quantity of this coal for a good many years to come?—That is my impression and my expectation.

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4656. The companies in London do not buy much of your coal?—I gave up gas engineering with the express view of introducing Lord Lothian's cannel to England; I now supply the Plymouth Gas Company with all the cannel they use; the Torquay Gas Company, the Exeter Gas Company, the Brighton and Hove Gas Company, and some I send to London.

4657. Considering our dark atmosphere, you suppose that your coal would be too bright for us?—Not too bright; I should like to see it improved with my cannel.

Mr. *Tom Abercrombie Hedley*, called in; and Examined by Mr. *Webster*.

Mr. *T. A. Hedley.*

4658. You were under examination here on the 30th of April last?—I was.

4659. On that occasion a question was asked, which was deferred to the present inquiry, as to the effect of laying mains as at present, or in subways, with regard to the question of cost. Will you tell us which is your opinion on that subject?—My experience, which has been very considerable with regard to gas pipes, both in London and the provinces, is that a very large quantity of gas is wasted in the earth. If that quantity of gas could have been sent to the consumers, I believe the price would have been reduced by the companies many years ago.

4660. Do you think that in further legislation, the question of subways is an important question?—I think so; for the last 20 years I have advocated the use of subways, feeling assured that the laying of gas pipes in subways would prevent the very large leakage that takes place, and the much larger leakage that used to take place.

4661. I suppose that in a place like the City, where the mains are constantly disturbed, the laying of subways becomes of greater importance than in ordinary places?—It does; for the leakage from gas pipes not only arises from the defective joint, but from the mode they have of inserting a wrought-iron service pipe into it; in London they have a different system from that adopted in the provinces; in London the hole is cut into the cast-iron with a chisel; in the provinces it is drilled; and in very rare cases can you get a man to cut the hole so round as to make a perfect joint with the service pipe.

4662. Is that question one of the elements of cost?—It is one of the great elements of cost.

4663. *Chairman.*] It was stated to the Committee the other day that the loss by leakage was 20 per cent?—It used to be 40 or even 50 per cent.

4664. I think it was estimated at 20?—10 per cent. is what I estimate it at now; it used to be 40 or 50.

4665. Mr. *Webster.*] Your attention has been called to the operation of the Metropolis Gas Act; does that Act afford any great motive for economy in the management of gas works?—It does not.

4666. What, in your opinion, would be the effect of more stringent regulations upon the question of economy of management?—I strongly object to gas companies being limited in their dividends; for if there was no limitation the gas companies would have a motive to reduce the price; at present the reduction of price only places the gas companies in a difficulty; they are obliged to increase the size of their works, and every reduction in price makes the companies still in a worse position; if they might pay a larger dividend they would have a motive in reducing the price.

4667. *Chairman*] Then how would you deal with a question of monopoly?—That would cure itself; if the consumer is secured good and cheap gas by the companies taking the benefit of it, the companies would all be trying who could make the largest dividend.

4668. Without competition?—Yes.

4669. Mr. *Webster.*] Then you must require adequate regulations as regards the quality of illuminating power, and the price of the gas?—Yes.

4670. Questions have been asked with regard to the consumers paying for the bad management and want of economy on the part of directors; is that provided against under the present system?—It is not; there are several gas companies, one especially, in which by bad management, one half of the capital has been wasted; their shares prior to 1860, not many years before, were selling for 50 *s.* per

50 *s.* per share, the 50 *l.* shares, so that parties who gave 50 *s.* are now receiving 10 per cent. on 50 *l.*, and back dividends for seven years; a large number of the shares have been sold in that way.

4671. Mr. *Morrison.*] What company is that?—The London Gas Company. The Chairman, in making his speech a few years ago, said that the shares might have been bought by the cart-load at 50 *s.* per share.

4672. Mr. *Webster.*] I think you have prepared a table showing the change that has taken place in the price of the gas companies' shares since 1859?—I have prepared a table showing the price prior to giving notice of the Gas Act in 1860, and prior to giving notice of the Corporation Act (*the Table was delivered in*). The table shows with reference to the Chartered Gas Company, that the 50 *l.* share was, in 1859, worth from 63 *l.* to 65 *l.*, and is now worth from 78 *l.* to 80 *l.* (the two dates are May 1859 and May 1865); with regard to the City of London, the 20 *l.* share was worth 30 *l.* in 1865, but in 1859 they were 150 *l.* shares, and were worth 100 *l.*; so that they are now at 50 per cent. premium, whereas in 1859 they were at 50 per cent. discount.

Vide Appendix.

4673. The Commercial shares, 25 *l.*, were worth 27 *l.*; they are now worth 42 *l.* or 43 *l.*——

4674. Mr. *Webster.*] What about the Independent?—The Independent, 40*l.* shares, were worth from 49 *l.* to 51 *l.* in 1859; they are now worth from 71 *l.* to 73 *l.*

4675. The London?—The London shares, 50*l.*, were worth 30*l.* in 1859, and 80 *l.* in 1865; in 1858 the shares were worth 12 *l.*

4676. The Phœnix?—The 60 *l.* shares were worth in 1859 from 62 *l.* to 64*l.*, and in 1865 from 80 *l.* to 90 *l.*

4677. The Surrey Gas Consumers?—The 10 *l.* shares were worth in 1850, 10 *l.* 15 *s.*; in 1865, 16 *l.*

4678. Take the Great Central, one of the strongest cases?—The 10 *l.* shares were, in 1859, worth 10 *l.* 5 *s.*; in 1865, they were worth 17 *l.* 5 *s.*

4679. *Chairman.*] To what do you attribute that rise in price?—To the districting in the first instance, and their having the monopoly; if such a concession as was made by the Committee in 1860 were put up to public competition, I believe the gas companies would be very glad to give the various parishes a large amount of money for it. If there is a foreign city to be lighted, they do not give a company the monopoly like the Committee of 1860 gave, but they put it up to competition; and I believe that as much as 50,000*l.* or 100,000 *l.* would be given; I think the consumer ought to have the benefit of that.

4680. Mr. *Webster.*] Does this show pretty conclusively and satisfactorily that the companies are benefited by the Act of 1860?—The table that I have made out shows that the gas companies' property has increased nearly 50 per cent. in value, but the benefit to the gas consumers has not increased in the same proportion.

4681. So far as the consumer is concerned, is the Act of 1860 adequate to their protection?—It is not; in one case the gas company immediately took advantage of it to raise the price.

4682. With regard to the application of meters to the public lights, and the average meter system, is that a practicable mode in your opinion?—I think so; it is the system that I have advocated for some time; wherever I have any influence over gas companies I always get them to adopt it; I was the engineer in Edinburgh for a number of years, and I got the gas company to allow the Local Board to use them; in Uxbridge, where I was contractor, I did not object to the Local Board using them; in every case I have said, "Let the Local Board or the Corporation fix one meter to every 12 lamps."

4683. In your opinion, would that be perfectly sufficient?—Yes.

4684. Is it practicable?—It is; I recommended it to the Birmingham Corporation, and it was inserted in their Bill last Session.

4685. Is the placing of a meter to every lamp impracticable?—It is impracticable for two or three reasons, on account of the cost and the great difficulty in the supervision.

4686. Do you conceive that under the present regulations there is sufficient responsibility as regards the accounts?—No, the accounts are kept in such a way that you cannot arrive at correct results.

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4687. Should there be a separation between capital and expenditure?—There should be.

4688. Is there at present?—Not clearly.

4689. Has it occurred to you that there should be plans of the mains kept at any place?—Yes; I have for some years given evidence that gas companies should be compelled to keep maps of their mains, on which they should show the size of the pipes, the distance they are laid from given points, and the depth at which they are laid; I believe if that was done the gas companies themselves would be gainers; I know in one case that that is so, and I believe it is in others; the gas companies do not know where their own pipes are laid.

4690. You have said that according to your opinion compulsory reduction of dividends is not the proper mode of controlling companies?—I do not think there is; there is really no inducement for a gas company to reduce its price.

4691. Do you agree in the suggestion that distinct accounts should be kept of the cost of particular parts of the manufacture?—Yes, the company should be compelled to show the quantity and price of their coals.

4692. Wages, the amount paid for purification, and details of that kind?—It should all be shown in detail.

4693. With regard to the ton of coal being adopted as the unit, is that useful for the purpose?—It is.

4694. You agree in that respect with the evidence given by Mr. Stevenson?—Yes.

4695. Would there be any difficulty in keeping the accounts in such a manner that a test of that sort could be applied?—Not at all; the companies keep their accounts in that way.

4696. But do not make their returns in that way?—No; I have acted as secretary for some years, and I have kept the accounts in such a way that I could show the directors at the half-yearly meetings the cost per ton for coals; the cost per ton for labour, whether on the works or out of doors, and the cost per ton for purification; so that they could see each half-year whether there was any increase or decrease. I think it ought to be so with the London companies; that they ought to keep their accounts in that way.

4697. I think you have applied that in Halifax?—No; I have had nothing to do with Halifax.

4698. You have heard the evidence given about the standard burner and the testing clauses?—Yes; I have already given evidence upon that.

4699. As matters are at present, as regards the consumer, do you see any remedy except competition, unless a very different system of restrictions is imposed upon the companies?—Without competition; but the monopoly ought to be well regulated; there is one case where a gas company carries out its work well, that is at Plymouth; nearly every year they are reducing the price, although coals are dearer than in London; it is the same class of coal at a higher price than in London, and they have reduced the charge to 2 *s.* 9 *d.*

4700. *Chairman.*] To the private consumer, or for public lamps?—To the private consumer.

4701. Mr. *Webster.*] Do I take it to be the result of your experience that there must be either competition or a very different regulation from that which exists under the Metropolis Act?—There ought to be, in order to secure to the consumers good and cheap gas.

Cross-examined by Mr. *Burke.*

4702. You have stated that since 1860 the value of the shares of the different companies has gone on increasing?—From 1859 to 1864.

4703. You have given some figures that have rather surprised me; you stated that the Chartered Gas Company in 1859 was selling at 65 *l.*, and in 1865 at 78 *l.*?—According to the share list.

4704. Are you aware that they are selling in this year at 63 *l.*?—I took the first price before the districting was known, and the other before it was known that the Corporation were coming to Parliament. The shares have fallen down now.

4705. Then they are selling in 1866 practically less than they were in 1859?—No;

—No; although they are reduced in the share list, you cannot buy at those prices.

4706. Is it the fact that the Chartered Company's shares which you say were selling in 1859 at 65 *l.*, have been quoted in the Stock Exchange share list this year at 63 *l.*?—Yes; but with the remark against them, "shares wanted." There were none to sell.

4707. Before 1860 was the price to the public dearer, or less than it is now?—In most cases it was dearer; in one case it was cheaper.

4708. In which case was it cheaper?—The Great Central.

4709. The Great Central has reduced now to 4 *s.*?—Yes.

4710. With that exception may I take it that, under a system of competition, the public were paying more for gas than they are now since the competition has ceased?—No; if you had competition you would have had gas at 3 *s.*

4711. You think so?—I am certain of it.

4712. Before 1860 gas was at a higher price to the public than it is in 1866?—That is so; since this notice has been given the gas companies have reduced their prices.

4713. I think they reduced their rates a good deal before?—They reduced in January.

4714. Before 1860 the companies were under no restriction, were they, as to illuminating power or as to testing the purity of the gas?—No; they were allowed to make it as weak as they could.

4715. Is that what you advocate?—No, I have advocated 20 candles for the last 30 years.

4716. In 1860 the public got this advantage, the limitation of price, which did not exist before, and a higher illuminating power than had ever been granted; they also got a clause compelling the companies to supply service pipes for nothing?—I know that the Great Central Gas Company supplied meters and supplied services, and they were bound to supply gas of a certain quality at 4 *s.*; now they supply at 4 *s.* 6 *d.*, and give a worse gas.

4717. Are you aware that in 1860 a limitation was put upon the price of gas by the companies, which did not exist before?—They had a maximum price put in their bill, which they have taken advantage of; they have kept up the price to pay for back dividends, bad management, and for extending their works, and other things, at the cost of the consumer.

4718. Is it the fact that in 1860 a limitation was put upon the price of gas in London which did not exist before; and is it not another fact that a higher illuminating power was required to be given by the company than had been fixed by any Act before?—It was required; but, unfortunately, that is all we have got.

4719. Is it so or not?—It is so in the Bill, but it is not the fact.

4720. In the Acts of Parliament there is that limitation?—It is in the Bill, but nowhere else.

4721. Is it also the fact that the standard of purity required by that Act had never before been required in London?—It was a very much higher standard than any that was even required before, because we had less impurity before that Bill. They put in a standard of 16, which was a much higher standard than we ever knew before, and gas companies have taken advantage of that.

4722. I ask you this simple question, does or does not the Act of Parliament give a standard illuminating power which was never required before?—I am not aware of it.

4723. Can you tell me any Acts of Parliament existing before 1860 for London giving so high a standard of purity?—No; but I can remember that the gas companies were all making, or all said they were making, 12-candle gas.

4724. *Chairman.*] Were not all companies for the first time, by the Act of 1860, required to supply services gratuitously?—No; I think I was cross-examined on that point in 1860, when I said that the Imperial did charge for service pipes.

4725. Mr. *Burke.*] My question is, whether the Corporation did not require that?—The obligation was in the Act, but it was not the first time with gas companies.

4726. Practically, before 1859, the companies, by competing with each other, ruined each others dividend, did they not?—No.

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4727. You have stated that the shares increased very much in value; to what do you attribute that?—Their management was so bad, that they could not possibly pay dividends.

4728. Do you or do you not know that before 1860, the cŏmpanies when competing with each other did not pay the dividends which they have been able to pay since?—I can say yes to that question.

4729. As regards the accounts that you say are insufficient, are you aware that the companies do not prepare the accounts in their own form, but are required by the Secretary of State to prepare them in any form he desires?—That is so.

4730. The Secretary of State could, and did consult, I suppose, proper persons?—I am afraid the Bill was so hurried through by the gas companies, that there were many clauses put in it that will not be put in again.

4731. One clause was, that the Secretary of State, and not the company, should define the form in which the accounts should be returned?—That is so.

4732. The Secretary of State can regulate that form as he thinks fit?—Yes.

4733. With regard to Plymouth selling gas cheap, are they under any particular obligations there?—Yes.

4734. Is there any restriction as to price?—I presume there is a maximum price in the Bill.

4735. Do you know of any?—I only know the fact that they are selling it at 2 *s.* 9 *d.*

4736. Do you know whether there are restrictions as to the illuminating power or the purity?—No; they are making 14-candle gas.

4737. Do you know that the Plymouth gas works were bought up at an extremely depreciated value, so that the capital employed in the Plymouth gas works bears no proportion to that employed in others?—As I happened to be one of the parties who happened to drive out the then existing company, I know the very reverse; that the Plymouth Gas Consumers paid the United General a very large sum of money for a lot of old rubbish, and when they got their works they were obliged to pull them down, because they could not use them.

4738. *Chairman.*] You say that they were not cheap, but dear?—Yes.

4739. Mr. *Burke.*] In Plymouth they are selling gas cheap, but with all the London companies you say the direct contrary is the case?—Not all; the South Metropolitan are selling at 3 *s.* 4 *d.*

4740. You supply gas at Uxbridge?—Yes.

4741. What is gas sold for there?—I can tell you what we charge for it.

4742. What do they sell it at?—That is a different matter; I supply the gas at Uxbridge to the company, they read the meters and give me 2 *s.* 6 *d.* per 1,000 feet; the company get for every 2 *s.* 6 *d.* they pay me, 5 *s.* 6*d.* from the gas consumer, but that is not by my advice.

4743. What dividend do they pay?—I cannot tell.

4744. We had it in evidence the other day?—I do not know so much about the accounts as you do; I am not connected with the gas company.

4745. I cross-examined you upon the Leamington gas on this point?—That was with regard to the price, not the dividend.

4746. Do you mean to tell me, being yourself the person who supplies gas to the Uxbridge Gas Company, and knowing the price that you charge the company, and the price they charge to the public, you do not know what dividend they pay?—I do not.

4747. How many years have you been there?—I have been there five years; I have never attended a shareholder's meeting; I have not seen the reports for three years, and I do not know whether they are paying the maximum dividend or not.

4748. You have never had the curiosity to inquire during five years, and you do not know what dividend is paid by the company?—Not for the last two years; I used to have shares, and then I did know the dividend.

4749. What was it?—The last that I heard of was $7\frac{1}{2}$.

Re-examined by Mr. *Webster.*

4750. Notwithstanding all this rubbish that was bought at Plymouth, gas is now

now sold at 2*s.* 9*d.*?—At 2*s.* 9*d.* and the company is paying the maximum dividend upon the capital that they have wasted and the capital they have spent.

4751. With regard to the time when the reduction took place by the London companies, you say it was not made until January?—I believe that is so.

4752. I suppose it was pretty notorious before that, that the Corporation were coming in with this Bill?—I presume so.

4753. Therefore, whenever notice might have been given, are you aware that the reduction did not take place until after it was known that the Corporation were agitating this question?—Not with the companies that I know anything of.

4754. And do you believe that the steps the City took to have this question reconsidered, had some effect on the notice to reduce?—There can be no doubt about it.

4755. My friend has gone through a great parade of the different clauses in the Act of Parliament, assuming the intention of the Legislature upon those clauses; have they been carried into practice?—They have not; I was engaged on the part of the insurance companies in the Wood-street fire case, and I should think that that cost the gas company from 30,000 *l.* to 35,000 *l.*; the Committee of 1860, I am sure never intended that that 35,000 *l.* should be taken out of the profits of the consumers by raising the price of gas.

4756. And from the experience you have had of the operations of the Metropolitan Gas Act, are these clauses, in your opinion, adequate to carry out the intentions of Parliament?—They are not.

4757. Mr. Serjeant *Kinglake.*] In the Act of Parliament there is a reserve fund allowed equivalent to 10 per cent. on the capital?—Yes.

4758. Can you tell me what is the proper object of that reserve fund; to what is it to be applied?—The companies have the right to pay back dividends for six years; of course they might not make 10 per cent. these years, and they are allowed to have a reserve to make up the 10 per cent. dividend on any occasion when it falls short of that amount.

4759. Supposing all the back dividends were paid up, what is the object of this 10 per cent.?—Take a case like the Wood-street fire; the gas company is cast in heavy damages, and then it would fall back upon the reserve fund.

4760. Any damages incurred by a company are to be paid out of the reserve fund?—That is what gas companies do, but I do not think it is right.

4761. You say that, in practice at any rate, that is the way in which this reserve has been used?—It is.

4762. The Act of Parliament anticipates that they are at all times at liberty to have a reserve fund equal to 10 per cent. on the capital?—Yes.

4763. To be stock in hand?—It should be.

4764. Supposing they do not want it, ought it not to be invested and receive interest?—Yes; when it reaches a certain amount the price of gas should be reduced.

4765. Supposing it has arrived at the full amount, would it not be the duty of the company to invest it?—It should be in all cases.

4766. There would be interest accruing to the company upon that?—Yes; the accounts at present do not show what becomes of the reserve fund, or what is done with the interest.

4767. Mr. Alderman *Lusk.*] Where is Uxbridge?—Eighteen miles from London.

4768. Which way?—Near West Drayton.

4769. Are there any coal-pits near there?—No; I buy my coals in the River Thames.

4770. You are in no better position, as far as coals are concerned, than London?—I am in a worse position; I have to get them by the canal.

4771. What do you say you really charge for gas?—Two shillings and sixpence per 1,000, and that includes leakage.

4772. How much do you think the plant would cost?—Unluckily, we are in the same position as they were at Plymouth; we bought the works of an old company, and sold the material, and the capital is much larger than it ought to be.

4773. What do you think you could produce good gas for, say 12 candles, according to the Act, to pay 10 per cent. dividend?—I have publicly stated in

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print for the last 15 years that the price ought not to exceed 2 *s.* 6 *d.* a thousand in London.

4774. Including the 10 per cent.?—Including the 10 per cent.

4775. Mr. *Hartley.*] Not on the present capital?—No; on the capital of some of them.

4776. Mr. Alderman *Lusk.*] What could you produce gas for in London, allowing 10 per cent. by the modern way of doing things?—Two shillings and sixpence per 1,000.

4777. It is no business to us or to the consumers what a man paid in his grandfather's time; the question is, what should be paid now?—I pay all the expenses at Uxbridge and charge 2 *s.* 6 *d.* per 1,000.

4778. *Chairman.*] Everything is found you in the way of plant?—I find everything but the dividend.

4779. Do you do the lighting?—I used to do so, but the parish do it now.

4780. You do not do it?—No, nor the gas company.

4781. You do not do the posts?—No, nor the gas company; the gas company have only to find the dividend and the secretary's salary.

4782. Mr. *Hartley.*] What is the dividend?—Ten per cent.

Tuesday, 8th May 1866.

MEMBERS PRESENT:

Mr. Dutton.
Sir William Gallwey.
Mr. Hartley.
Mr. Serjeant Kinglake.
Mr. Alderman Lusk.
Mr. Morrison.
Sir John Ogilvy.
Mr. Hastings Russell.
Mr. Staniland.
Sir John Trollope.
Mr. Woods.

SIR JOHN TROLLOPE, IN THE CHAIR.

Mr. *Robert Baxter,* called in; and Examined by Mr. *Denison.*

Mr. *R. Baxter.*

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4783. ARE you now acting as Solicitor to the 13 gas companies?—I am.

4784. You also acted as their solicitor in the inquiry of 1860?—I did.

4785. And you mainly conducted the case as far as counsel were not present in 1860?—Yes.

4786. Let me direct your attention to the 26th clause: "If the gas supplied by the gas company be at any time of less illuminating power, or of less purity than according to this Act it ought to be, the gas company shall, for every such offence on a summary conviction before a police magistrate, forfeit a sum not exceeding 50 *l.*, and also in addition to that penalty, and whether that penalty be recovered or not, a further sum of 10 *l.* for every day after notice in writing from the local authorities during which the offence continues: provided that such police magistrate shall not convict under this section if it shall be proved to his satisfaction that such defect of gas was occasioned by any unavoidable cause or accident." I do not remember that there is any clause that need be read with that?—That is the clause with regard to the penalty; the parties who are to impose it are mentioned in the other clauses. Clause 30 says, "The examiner, on payment to him of a fee of 10 *s.* 6 *d.* by any consumer, shall at his request examine and report to him on the illuminating power and the purity of the gas, supplied as hereinbefore mentioned, and any consumer may make complaint to any magistrate with respect to the illuminating power or purity of the gas supplied to the complainant, and proceed thereon according to the provisions of this Act."

4787. If any consumer chooses to make the examination for himself, or to get it made by a private chemist of his own, they are independent, are they not, of the examiner to be appointed by the vestries?—Altogether. The companies are liable to the penalty of 50 *l.* if they do not keep the gas at the proper illuminating power and purity; the person who makes the charge has to prove it; he may have his own chemist to do it, and unless contrary evidence is offered, the magistrate, upon the evidence of his own chemist that he has examined the gas and does not find the illuminating power to be right, or that there is more sulphur or impurity in the gas than is allowed, would convict.

4788. The gentlemen who came here and said they had a difficulty in proceeding because no examiner had been appointed were mistaken in point of law?—Perfectly mistaken; there is no difficulty whatever; it is the simplest thing in the world; you only have to get a summons from a police magistrate; you get the gas examined by a competent man, and on his examination the charge is

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founded; he gives the proof, and unless that proof is contradicted by some man more competent than the witness you bring, the magistrate will, of necessity, convict, and it is a summary conviction; it is not the case of an action or a trial by jury, but a summary conviction before a magistrate.

4789. Is there any difference between such an inquiry as might be made by a private chemist, and an inquiry that might be made by the examiner, if he was appointed?—Only this, that probably the magistrate would say, in the case of the examiner, "This person has been officially appointed, and therefore I have more reliance upon his evidence than upon that of the person selected by the individual who makes the complaint."

4790. In that case the company would be entitled to bring chemists of their own to contradict the official examiner?—No doubt.

4791. So that in that case it would be a question of evidence to be fought out between the examiners, official or private on one side, and the company's chemist on the other?—Certainly; the process on the part of the consumer is perfectly simple in those cases where examiners are appointed; if any consumer in the district pays 10*s.* 6*d.* he can get a copy of the examiner's report, and he is entitled to take the examiner before the police magistrate; upon proof of any defect of illuminating power or purity, the magistrate must convict, unless the company can show that it is some mistake.

4792. I suppose you would hardly, on the part of the company, be prepared to accept one-sided evidence without the opportunity of meeting it?—The companies of course must have the opportunity of appearing and giving evidence on their own part in the event of the examiner being mistaken.

4793. When gentlemen come here, like Dr. Letheby, and complain of the expense of the inquiry, I suppose that is incident to every litigation?—There is really no other expense than the summons before the magistrate, the attendance, and hearing witnesses.

4794. That is about as cheap an inquiry as well can be?—It is the cheapest that our country has, to go before the magistrate and get a conviction.

4795. There is a penalty of 50 *l.* and also a penalty of 10 *l.* per day?—Yes.

4796. Dr. Letheby (who is an authority upon law as well as upon chemistry for the present) has told us that there has been a difficulty in enforcing the Act in the City, on account of some commissioners; do you know that case?—I know the case very well; they went before the magistrate, who said at the second sitting, "I find that I am interested, and therefore I will not go on with the case."

4797. *Chairman.*] He was a gas owner?—He was a member of the Commissioners of Sewers; the Commissioners of Sewers made the complaint, and one of their own body was adjudicating upon it; as soon as this was found out he said, and very properly, "I cannot go on with the case." In the next case the Commissioners of Sewers again complained, and they made their own clerk sign the summons, so that they were the complainants, and the parties summoning the company to answer the complaint, which was just as if the magistrate had made a complaint, and made his own clerk summon the offender; that was objected to by Mr. Coleridge, and the magistrate sitting there ruled that the objection was fatal, in point of form, and there the matter dropped. It was competent for them the next day to take out a summons in the proper form, and go on with the case again.

4798. But, in fact, they did not?—They did not.

4799. I may ask you, as a lawyer, would there have been the slightest difficulty, so far as form goes, in adopting the proper form to prosecute that inquiry?—I apprehend not.

4800. You are acquainted with section 32?—Yes.

4801. That section gives the magistrates power to make any order as to costs?—Yes.

4802. So that these gentlemen cannot complain of having even that risk?—The clause goes further than that, and contains powers which are not generally committed to magistrates. Clause 32 says, "The magistrate may, by the order, direct that any specific acts shall be done by the gas companies for removing the ground of complaint, and may make any order as to costs."

4803. It is like the power of mandamus?—It is as a power that is answerable

able to the power of mandamus in the Court of Queen's Bench; he may order the companies to do any specific act, and they must obey him; the Act has armed the magistrate with more than usual power.

4804. And I think you said it was a summary conviction?—Yes.

4805. And there is no appeal from it?—I believe not. The clause says, "And all orders so made shall be final and binding on all parties."

4806. Then you have first of all a simple inquiry; secondly, the cheapness of it; thirdly, the power of the magistrate to give costs; fourthly, the power to order anything to be done; and fifthly, the fact that the order is final and without appeal?—Yes.

4807. Suppose the matter were wholly *res integra*, can you think of anything else which would give more power to the magistrate than these clauses?—I cannot; and Mr. Estcourt, who was Chairman of the Committee on that occasion, said, "We shall enforce these in the strictest possible way." A plan was devised by which the consumer may complain before the magistrate and get a conviction; next, any local party may go to the courts and complain; and the Secretary of State may take action; and lastly, the Secretary of State may direct the Attorney General to prosecute the companies. All those provisions are in the Act.

4808. The clause that refers to the Secretary of State is, I believe, the 7th: "If at any time complaints as to the quantity and quality of the gas supplied by any company be made to the Secretary of State by memorial in writing from the Metropolitan Board of Works, signed by their clerks respectively, or not less than 20 inhabitant householders paying rates for and supplied with gas by any such company, it shall be lawful for the said Secretary, at any time within one month after the receipt of such complaints, to appoint a competent person as inspector, to inquire into and concerning the grounds of such complaints, and to report to the said Secretary thereon." The inspector is to give notice of his appointment, and if anyone interferes with or obstructs him, he is to pay a penalty of 10 *l.* Then there is to be notice of the complaint, if well founded; then the company are required within a reasonable time to remove the grounds of complaint. And clause 12 states, "Every gas company shall in all things obey the orders of the said Secretary made in pursuance of this Act, and, in default of their so doing, they shall be liable to a penalty not exceeding 50 *l.* for each offence." And clause 13 says, "All the costs, charges, and expenses of and incident to any inquiry and decision of the said Secretary of State under this Act shall from time to time be borne and paid by such parties as the said Secretary of State shall direct; and such decision may upon an *ex parte* application be made a rule of any of Her Majesty's Superior Courts of Law at Westminster"?—Yes.

4809. Taking that group of clauses, they are quite independent of the other matters that we have been dealing with before the magistrate?—Altogether independent.

4810. That is in the nature of a more public inquiry?—Yes.

4811. Did the Committee of 1860 deal with that also, as a separate matter?—Yes.

4812. So as to give the fullest powers to the Secretary of State upon it?—Yes, and that has been acted upon.

4813. *Chairman.*] The appeal to the Secretary of State?—The appeal to the Secretary of State.

4814. In many instances?—In one only; in the case of the Independent Company a complaint was made to the Secretary of State that the gas was impure; the Secretary of State immediately appointed an inspector, Dr. Letheby, who, within a few days, made his report; within four days of his report being made the Secretary of State issued his order, and, rapid as that mode of proceeding was, the matter was remedied before the order was issued to the company; in that case the process was gone through; the Secretary of State was put in action, and it entirely answered the purpose.

4815. Who paid the costs in the appeal to the Secretary of State in the case of the Independent Company?—I think the Independent Company paid the costs.

4816. Were they convicted?—Yes, the order of the Secretary of State was, that there was good ground for the complaint, and he ordered the company to use greater caution in purifying, so as to remove the cause of the complaint.

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4817. Mr. *Hoggins.*] What was the date of that?—I do not remember.

4818. Mr. *Denison.*] Have you anything further to say with regard to that case of the Independent Company?—Nothing. The Secretary of State was put in action; the order was made and obeyed. I may say that the excuse on the part of the company was that their purifiers were exceedingly out of order at that time; they remedied the defect before the Secretary of State had issued his order for them to do so.

4819. And, probably, they paid the costs without the thing going to the superior court, and being made a rule of that superior court under section 13?—Certainly; I find that the date was the 4th January 1865. The vestry of St. Leonard's, Shoreditch, made the complaint, and it arose, as I have said, from one of the purifiers being out of order at the time, so that there was accidentally an excess of sulphur in the gas. Nothing can be more easy to put in execution, or nothing more practical when put in execution, than the application to the Secretary of State. The inspector is appointed; he tests the gas at once; he finds whether the impurity is there, and, if it be so, the companies are subject to the order of the Secretary of State. If they do not obey that order instantly, they incur penalties from day to day, and may be prosecuted by the Attorney General.

4820. The 45th clause, in more stringent cases, may be put in action: "If and whenever it appears to the Secretary of State that any of the provisions of this Act have been violated or not complied with on the part of any gas company, or that the gas company are acting in a manner unauthorised by law, and if it appears to him that it would be for the public advantage that the gas company should be restrained from so acting, or compelled to do any act for remedying the wrongful act done by them, the Secretary of State may certify the same in writing to Her Majesty's Attorney General; and thereupon he, if he be so advised, shall proceed by information, bill, or action, or other such proceeding at law or in equity as the case requires to restrain the wrongful action, or to compel the doing of the acts for remedying the wrongful acts: provided always, that the Secretary of State shall not give the certificate at a period exceeding one year after the committing of the offence specified in the certificate." I suppose there has been no occasion to put that in force?—There has been none, but it may be put in force; and the information by the Attorney General is by no means a thing to be despised; it is one of the strongest forces of the law that can be brought to bear upon the offender.

4821. That is, you may proceed to get an injunction in the Court of Chancery, a mandamus from the Court of Queen's Bench, or bring an action in any court?—Or an information in the nature of an indictment.

4822. Sir *John Ogilvy.*] But nothing has been done?—That section has never been put into operation.

4823. Mr. *Denison.*] The only complaint that has been made was dealt with in the way you have described?—Yes.

4824. The 47th clause gives still more power to the magistrates: "Every magistrate shall, for the purposes of this Act, have full jurisdiction and full power and authorities over the parties respectively, and with respect to making orders on the parties respectively and otherwise, and as to costs, and may issue every such summons, warrant, and other process, and may take such other proceedings as he thinks requisite; and the service of any summons, notice, order, or other process in the matter, on such person or in such manner as a magistrate directs, shall be good service thereof; and every magistrate may proceed singly in the execution of this Act in such manner as he thinks proper"?—Yes.

4825. I think those clauses exhaust what may be called the penalty powers of the Act, do they not?—Yes.

4826. What is the clause with regard to arbitration as to public lamps?—The 38th clause.

4827. The 37th clause is to this effect: "The gas company shall not charge a higher price by the 1,000 cubic feet for gas supplied to any local authorities than the lowest rate by the 1,000 cubic feet from time to time charged by them to any private consumers, otherwise than by special contract in writing, in the district supplied by the gas company." And the 38th clause is this: "If any difference arise between the local authority and the gas company with respect to

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any alteration in the test, or to the rate to be charged for gas supplied, or for lighting any public lamp, the difference shall be referred to and be determined by arbitration in the manner prescribed by the 'Companies Clauses Consolidation Act, 1845,' with respect to the settlement of disputes by arbitration." Has there been any demand upon any of the companies to settle these matters by arbitration?—I am not aware of any.

4828. Here, again, is there any difficulty in having that arbitration enforced?—Not at all; it is a matter continually going on between railway companies and other parties; the proceeding by arbitration is constantly in action, and is found to be efficient.

4829. You have had plenty of experience, I think?—I have, indeed; any award can be made by an arbitrator to guide and bind the company for years to come; it relates to a series of lamps for which the parish may be paying 500 *l.* or 1,000 *l.* a year; if they think that they have not light enough, or that they are paying too much, they may refer the matter to arbitration, and what the arbitrator settles will be binding upon the company for all time, until another arbitrator is called upon to vary it; it seems to me a very practical way of settling the matter.

Chairman.] It has never been adopted.

4830. Mr. *Woods.*] Is there any provision in this clause to enable the arbitrator to measure in anyway; the clause appears to be very complete as to certain things being done, but is there any mode of defining it in the clause?—No, the matter to be settled by arbitration would be the manner of supply and the price of the supply; the arbitrator would not himself measure; the measure can only take place by means of a meter.

4831. With the consent of the company?—The company are bound to provide meters if they ask for them; if the public authority ask for a meter the company must supply it, but the difficulty lies here. Each lamp communicates with the general main, so that you cannot put a meter that will measure more than one lamp; if the lamps had a pipe of their own, and you could put a meter at the end, so as to measure 20 or 50 lamps by one meter, there would be no difficulty; but as each lamp is upon the main, you must have a meter for each lamp.

4832. My question was, was there anything in these clauses giving any powers to the other side to enter upon an examination, and to obtain any information beyond such as the gas companies would afford; there are no means of measuring the quantity, or anything of that sort allowed to the public?—There are no practical means allowed to anybody; of course the arbitrator cannot perform impossibilities.

4833. Mr. *Denison.*] I believe you can give some information about the reserve fund question?—Yes.

4834. Mr. Serjeant *Kinglake.*] That is in the Gas Clauses Act of 1847?—Yes, the reserve fund is formed under the 31st section of the Gas Works Clauses Act: "If the clear profits of the undertaking in any year amount to a larger sum than is sufficient, after making up the deficiency in the dividends of any previous year as aforesaid, to make a dividend at the prescribed rate, the excess beyond the sum necessary for such purpose shall from time to time be invested in Government or other securities, and the dividends and interests arising from such securities shall also be invested in the same or like securities, in order that the same may accumulate at compound interest until the sum so formed amounts to the prescribed sum, or if no sum be prescribed, a sum equal to one-tenth of the nominal capital of the undertakers, which sum shall form a reserve fund to answer any deficiency which may at any time happen in the amount of divisible profits, or to meet any extraordinary claim or demand which may at any time arise against the undertakers; and if such fund be at any time reduced, it may thereafter be again restored to the said sum, and so from time to time as often as such reduction shall happen." Then clause 32 says, that the company shall not take money out of that fund to answer extraordinary purposes, except under an order by two justices. Then comes the 33rd clause, which says, that when the reserved fund shall have reached the amount of one-tenth of the capital, the dividend and interest shall go into the coffers of the company as part of their divisible profit.

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4835. In point of fact their rates would be reduced?—Then their rates must be reduced.

4836. Mr. *Morrison.*] Does the order of the two justices apply to both the matters mentioned?—Only the last. The company can themselves, by their Act, take as much money out of the reserve fund as will make up the 10 per cent., but they cannot take anything for extraordinary contingencies except by an order of two justices.

4837. Sir *William Gallwey.*] What is that order required for?—In case of any extraordinary claim; any accident; for instance, the bursting of a gasometer, which may entail the laying out of 4,000 *l.* or 5,000 *l.*; the company could go to that fund for an extraordinary accident and take out 4,000 *l.* or 5,000 *l.* for the purpose, to be replaced gradually out of their annual profits.

4838. Would the purchase of land and plant be included?—It would not apply to that.

4839. Mr. *Denison.*] For that they must increase their capital?—That would be new capital.

4840. *Chairman.*] Have you any knowledge of the circumstances of the Wood-street accident, which caused so great a loss to the Central Company?—Yes.

4841. Can you inform the Committee how it was that they did not go to the reserve fund, but rather took it out of their annual earnings?—Because they had not got sufficient to pay it.

4842. They had not enough?—No; they were obliged to divide it over subsequent years; they could not pay it off at once.

4843. They do not appear to have taken it out of their annual earnings beyond the reserve fund; they still paid their shareholders 10 per cent. in all these years?—In some of those years they did.

4844. I think in all of them, according to the return before us?—I think they did not pay 10 per cent. every year, but they had not a sufficient reserve fund to pay for the whole accident, therefore, part of it was taken out annually.

4845. In fact, they did not give the consumers the benefit of the surplus profits?—Yes; that is to say, the surplus profits, after deducting the losses, of course; whoever carries on the works will be subject to loss. Supposing there had been corporation works, the Corporation would have had to take 25,000 *l.*, or whatever it was, out of their funds for the time, and they would have replaced it gradually out of profits; it would be the same thing exactly.

4846. Mr. Serjeant *Kinglake.*] I understand the surplus fund is not applicable to increased dividends, until there is a reserve in hand equal to a tenth part of the capital?—No, the excess of profit must be applied in reduction of the price of gas so soon as that reserved fund is complete; not till then.

4847. Mr. Alderman *Lusk.*] It is "heads, I win; tails, you lose"?—No, on the contrary, "heads, I lay by a reserve fund; tails, I give you a reduction of the gas."

4848. Sir *William Gallwey.*] Must they obtain the sanction of two justices if they wish to purchase land, or for any extraordinary expense whatever, before they can apply to it their excess of annual earnings?—No, the purchase of land would not be extraordinary; it must be some claim or demand; it can apply to some such things as an accident, which brings a claim upon the company that they were not prepared to meet, such as the destruction of part of their works, involving an outlay in the restoration, which they were not prepared to meet out of the income.

4849. Is not the purchase of land and buildings generally considered, in all concerns, as a matter which should be paid out of capital?—That is exactly it; this Act does not contemplate any part of the reserve fund going as capital; none of it whatever.

4850. Mr. Serjeant *Kinglake.*] On being laid out in new works?—No.

4851. Mr. *Staniland.*] The purposes are clearly defined in the Act?—Perfectly; the two things are, first, to take care that the dividend is kept to 10 per cent., because, when you reduce 6 *d.* per 1,000 cubic feet, it does not follow that you can make a dividend of 10 per cent.; then you have a reserve fund, a certain amount that guarantees that the dividend shall not be reduced, and if you make a claim upon that fund to make up the dividend, you replace it as soon as the profits enable you to do so; that is the process of reduction.

4852. Sir *William Gallwey.*] When you first established your works, how did you purchase the land, buildings, and plant; was it not out of capital?—Altogether.

4853. Then if you want to purchase more land and more plant, do you purchase it out of the capital if you have an excess of profits?—It must be purchased out of capital, you cannot purchase it out of excess of profits.

4854. Do you require to go to any authority, such as two justices, to give you the power?—No; any one man who consumes gas can go to the quarter sessions, and they will appoint an accountant to look into the accounts and ascertain what are the profits of the company, and what is the capital of the company. If he ascertains that the profits exceed 10 per cent., and that the reserve fund is completed, then the quarter sessions have the power to say, "You shall reduce your gas 3 *d.* or 6 *d.* or 1 *s.* per 1,000 feet," so far as they can reduce it without diminishing the 10 per cent. They will make the best gas they can upon that, and the reserve fund takes care to supply the deficiency.

4855. Mr. *Morrison.*] I presume you cannot increase your capital without applying to Parliament?—Yes.

4856. You often increase your capital by capitalizing profits, but you can only do that under the authority of Parliament?—It must ultimately come under the authority of Parliament. Before the public were in the habit of making complaints against the companies, the companies, like the old fashioned companies that all of us who have passed a great many years in the world remember, did not so much care for making a large dividend as having a good reserve fund and keeping the works in good order. All the old companies in London invariably spend money out of profits, having only paid six or five or four per cent., never attaining the maximum. When they came for further capital to Parliament they laid this before Parliament; it was investigated by the Committee, and they were allowed to capitalize the money they had spent out of profits, but they were only given sometimes four or five or six per cent. upon these capitalized profits, which, if they had been wise in their generation, seeking to make the most of their money, they would have divided, and called up more capital on which they would have got 10 per cent. It was all in favour of the public that they did it, but the public have taught them now to be more upon their guard, and to ask for capital from Parliament when they want to lay out fresh money.

4857. Mr. *Woods.*] Has that been done since 1860?—It is done every year.

4858. Have they increased their capital out of excess of profits?—The gas companies have laid out no profits as capital since 1860.

4859. You do not capitalize profits without applying to Parliament. Is not the practical operation this—that the money due to the gas consumers in the way of reduction in the price of gas is turned into capital, and then the interest on that at five per cent. is paid into the hands of the original shareholders, so as to increase their real dividend above the 10 per cent.?—That would be so if it were the fact that whenever they spent the profits as capital they were paying the full 10 per cent.; but that never has been the case. I have been concerned for gas companies for the last 10 years, and I have never known a case where they have paid 10 per cent., the full dividend, and yet spent money out of profits.

4860. Even though they were not paying 10 per cent. at the time when they capitalized their profits, they would have the power to make up their back dividends to 10 per cent. in future years?—They would have had if the Act of 1860 had not passed, but the Act of 1860 cut down that power, and the companies abandoned between 300,000 *l.* and 400,000 *l.* which they could have claimed under the Gas Works Clauses Act, and which may be claimed by any other company in the kingdom. That was cut down by the Act of 1860, and given up for the benefit of the public.

4861. The particular effect of it would be this, to come back to the Wood-street fire; if the Great Central Company had been paying 10 per cent., the compensation for Wood-street would have been paid by the gas consumers and not by the Great Central?—It is true that any accident of that kind happening to a company that pays its full dividend will always fall upon the consumer; it is incident to the business; it is like a bad debt that a tradesman makes; it is part of the expense of his establishment, which he puts upon the price of his goods;

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goods; it will always be so; but the benefit to the public is when the companies are paying their full dividends, and a reserve fund is formed; every further outlay of capital brings a much larger profit, and the reduction of the price of gas becomes more rapid. Take the instance of two companies observed upon in this Committee, the Independent and the South Metropolitan; they are furnishing gas at 3*s.* 4*d.* instead of 4*s.*, why is it? By an arrangement they were able to get a district of their own five years before the other companies, therefore they have sooner come to their maximum dividend; they have sooner put by their reserve fund, and can sooner and more rapidly reduce the price of gas. If the gas companies are allowed to go on, you will find the price of gas coming down every year by the accumulation of profits on the sale of gas. The Committee must be aware that the quantity of gas issued in London is very large; the quantity supplied to the large district of the Imperial is doubled every 10 years.

4862. *Chairman.*] From building?—And the increase of the inhabitants. Take another district where you would not think there would be any increase, that of the Independent, fully peopled as you think their district to be; their gas increases five per cent. annually, and the quantity is doubled in 20 years. It is the quantity of gas that is sold that cheapens the price. If you keep the capital in the hands of one company, and let the mains already laid down be the purveyors of the increased quantity of gas to the consumers; but if you lay out fresh capital, and put down new mains, then the return upon the capital laid out is very much less. The Imperial is now asking for a large sum of money. If they lay out another half million of money, they will send a great quantity of gas through the old mains, and the capital laid out in those mains will be doubly productive; the profits will increase faster, and the reduction will go on faster.

4863. Mr. Serjeant *Kinglake.*] You have the materials for increased production without much outlay?—Exactly; that is the difference between a new company and an old one.

4864. Mr. Alderman *Lusk.*] That is a very fine district, is it not?—Very fine.

4865. Mr. *Denison.*] The institution of this reserve fund is limited by the 31st clause of the Act; that is to say, it cannot begin until the dividends have reached the prescribed amount?—That is so.

4866. It does not rest with the discretion of the company to put by so much to the reserve fund, but they absolutely must do it when they have reached the prescribed amount; they have no right to do it before?—That is so.

4867. All that is fixed for you?—Yes.

4868. And not only fixed for you, but fixed for every gas company in the kingdom?—Yes.

4869. In this respect you do not differ from any other gas company; and nothing was done in 1860 to alter the general condition of the gas companies?—The only alteration was made against the gas companies, seeing that while the country gas companies have the power of making up back dividends from the very first institution of the companies, these companies can only make up their back dividends six years; therefore there is about 350,000 *l.* that the London gas companies might have repaid themselves if the Act of 1860 had not passed.

4870. You say that when you have to go to Parliament to capitalize profits, that becomes their after capital?—Yes.

4871. But this also happens, does it not; Parliament never gives 10 per cent. upon that new capital?—Not now.

4872. The 10 per cent. that you were given under the Act of 1860 was a sort of vested right that you had before?—Yes; 10 per cent. is the statutory right now; but Lord Redesdale interposes and says, "I have made out a rule that you shall not have more than seven-and-a-half per cent.;" many of the companies have submitted to it, so that it has become a practice of Parliament.

4873. The competitions which a great many persons have talked of here had actually ended before the Act of 1860, had they not; it was not ended by the Act of 1860, but by agreement before?—The companies had, by agreement between themselves, somewhat assorted the districts within the metropolis; the Act of 1860 perfected it; the only exception was in the case of the Great Central; they were the invading company; they came into the City of London, and

and there was a distinct competition still going on between the Great Central and the Chartered and the City of London Company.

4874. They agreed, did they not, at the time of the Act of 1860, or just before that, they would end their competition?—They agreed to a certain fixed price.

4875. Mr. *Staniland.*] It was stated by a witness yesterday that there were no provisions anywhere for ascertaining the amount of capital on which dividends should be paid, and that, mixing up the accounts of income and expenditure and capital together, as sent in to the Secretary of State, it was perfectly impossible to ascertain, from a reference to these accounts, the amount of capital of each company; will you be good enough to refer to that clause in the Gas Clauses Act which provides for the investigation of the concerns of companies, with a view of ascertaining what their capital is, and explain your views as to its being sufficient for that purpose?—The 35th section of the Gas Clauses Act states, that "the court of quarter sessions may, on the petition of two gas rate-payers within the limits of the special Act, nominate and appoint some accountant or other competent person, not being a proprietor of any gas works, to examine and ascertain, at the expense of the undertakers, the actual state and condition of the concerns of the undertakers, and to make report thereof to the said court." He must necessarily ascertain how much is capital and how much is profits; he must state the amount of capital of the company, in order to state the profits of the company, and whether they have reached the proper amount or not; this is the method in which the capital will always be ascertained when gas consumers come for a reduction of the price. Honourable Members know that when a gas company comes into Parliament for further capital, the state of their past capital is always investigated by the Committee. They are obliged to lay before the Committee a statement of their past capital, and then the question of whether they shall have further capital is determined by the Committee before whom they come. There are several Bills now before the Committee, and when the Committee get upon those Bills, if the promoters ask for further capital, the Committee will inquire what is the present capital, and when it has been raised. You have the capital ascertained upon each application to Parliament, and you have the capital investigated when an application is made to the sessions to reduce the price of the gas.

4876. Do you think that that provision is ample for the purpose of distinguishing by means of an accountant between capital and dividends, or expenditure?—You cannot possibly have a better mode of doing it; to appoint an accountant to investigate is the only way by which you can settle what has been spent as capital and what belongs to profits.

Cross-examined by Mr. *Webster.*

4877. You told my friend that you had the conduct of the Bill in 1860 on behalf of the companies?—Not the conduct; I had the opposition to the Bill. The Bill was brought in by the ratepayers, and Sir John Shelley had the conduct of the Bill. I came on behalf of the gas companies to oppose it.

4878. I think it came on for two years, did it not?—There were three years of inquiry; there was a Select Committee appointed in 1858, another Select Committee in 1859, and there was the Gas Bill of 1860.

4879. My learned friend referred to the fact, that, at a certain stage, the clauses in the Bill were adjusted by the agents?—Yes.

4880. I think by yourself and Mr. Wyatt?—It so happened.

4881. And these clauses, as they now appear, are clauses, many of which, I believe, were prepared by yourself?—I think not.

4882. Were any prepared by yourself?—I will not undertake to say that there were no clauses in the Bill prepared by me; but the Bill was prepared by Mr. Wyatt adversely to the companies, and I had to fight the Bill, clause by clause, before the Committee; if I did prepare any clauses, it was only in this way, that Mr. Wyatt had proposed some clause which the companies could not accept, and I opposed it, and proposed to substitute something else for it.

4883. I do not mean that the Bill was originally prepared by you; but I am suggesting that there was considerable discussion upon the clauses; that Mr. Wyatt brought up some clauses and you others, and in the end the Bill was adjusted pretty much to your satisfaction?—Well, that is going a great way.

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4884. Is it going too far?—It is going too far, in this respect; the Committee reported to the House certain resolutions which they had come to against the companies; the companies went into the House of Commons, and the matter was debated; the Bill was sent back to the Committee to reconsider its resolutions; when they came to reconsider the resolutions, it so happened that counsel were not present at the moment; Mr. Estcourt would not admit of any delay, and I was obliged to take up the argument on behalf of the companies; then Mr. Wyatt, with very great chivalry, said he would not call in his counsel, as the companies had not the benefit of their counsel.

4885. And between the public spirit on your part, and the chivalry on the other, the clauses were adjusted pretty much to your satisfaction?—I certainly should not say that.

4886. Will you tell me any clause in that Bill which you objected to?—I really cannot tell you at this distance of time.

4887. I ask you, with your experience of what has taken place during the last six years, and having the clauses of the Bill before you, whether there is any clause in it which you objected to?—A great many.

4888. Or which you object to now?—There were a great many that I did object to, but now that the Bill has passed into law, I do not object to it.

4889. I am sure you will not say that on the whole the clauses were not very satisfactory to you?—All I say is that I opposed the clauses which I did not like, and many of them I did not like; but I accept them as they are, because I could not get anything better.

4890. I wish you to tell me whether, as a matter of fact, the clauses, as adjusted after your opposition, with your and Mr. Wyatt's chivalry, were not very satisfactory to you, as the agent of the companies?—If you mean to ask me whether this is such a Bill as I would have promoted, I should say certainly not.

4891. I ask you whether there is any one clause which you can put your finger on in this Bill which you will say was not satisfactory to you as agent of the companies?—There were certain clauses that I objected to; if I could have put away the whole Bill itself, I would have done so on behalf of the companies.

4892. As it came out of the fire, it has been a pretty good Bill for the companies?—Certainly one thing that was desirable which has been settled by the Bill, is the system of districting. Let the gas companies alone with the districting, and you will have gas cheapening every year, and it will not only be satisfactory to the companies, but satisfactory to the public.

4893. With regard to the reserve fund, has it afforded the company the means of making up back dividends?—It is intended for that purpose.

4894. Do you know any instances in which any of the companies have been allowed so long as six years to make up their back dividends?—Yes.

4895. Did you hear the evidence yesterday?—You asked me, if I understood your question, if I knew of any case in which a company had paid the dividends for a longer period than six years.

4896. What I meant to ask you was, whether you know of any instance in which, by any special Act, companies have been authorized to pay back dividends for as long a period as six years, except in this Metropolis Act?—I say that every other company in the kingdom with which I am acquainted has the power to make up its dividends without limit as to years. If they have been 20 years in existence they may make up their dividends for that period. This is the first instance that has come under my knowledge in which a company has been limited. Since the Act the same thing has been imposed upon two or three other companies; but this was the first instance in which Parliament said, "You may not make up all your back dividends."

4897. Under the Gas Clauses Act there is no limit in point of time?—No.

4898. Do you know of any case in which, when the matter had been before Parliament and there was a special Act regulating a company, the company was allowed to pay back dividends for as many as six years?—I have passed many companies' Bills, and I have never known any limit upon paying back dividends.

4899. Do you know of any instance in which the attention of the Committee has been called to it where that length of period has been given?—I have not had a case.

4900. Did you hear the evidence given yesterday upon that point?—I did not.

4901. Several instances were referred to in which the period limited was two or three years; do you know of any such case?—It has not come within my practice.

4902. I did not understand you to say that there have not been good grounds of complaint on the part of the consumers with respect to the want of illuminating power and purity?—With regard to the want of illuminating power, certainly not. As to the matter of purity, all I can say is that I have had some considerable experience in chemical affairs, being connected for many years with the companies; and as you ask my opinion, I venture to say that the chemical test as to purity is a very infirm one, and is not at all understood, not amongst men like myself, but amongst the first chemists whom I have consulted.

4903. Do you deny the evidence given here as to the complaints of consumers being well founded in respect to the want of illuminating power and the want of purity?—I have not heard complaints as to illuminating power, except from private consumers, who come and say that the gas gives no light. I am a consumer myself, not only in my private house, but in school rooms and mission rooms, and I know many cases in which there has been a want of light, but it has always been traceable to the pipes, to the burners, or to the meters; to the apparatus which brings the gas from the main; it does not belong to the supply by the company. If the supply of the company were to fail in one instance it would fail in a thousand at the same moment.

4904. Do you know of any instance in which any application has been made for information under this clause, with respect to want of illuminating power and purity, by a private consumer?—Not to the justices, excepting the gas consumers of sewers, in the instance to which I have alluded; but application was made to the Secretary of State in the other instance to which I referred.

4905. You told my friend that it was the simplest thing in the world, under the 31st and 32nd section, for any person to lay complaints before a magistrate?—Certainly.

4906. Have you known any instance in which such a complaint has been made?—I have not.

4907. Notwithstanding the numerous complaints by private consumers?—I can only say that when I hear of a private consumer who says that he has for years been in want of illumination and purity, and has never taken the trouble to complain to the company, I am surprised he has not gone to the magistrate.

4908. You are not aware of any complaint having been made, or any order being made by a magistrate under the 32nd section?—No, I believe none has been made; that is no reason why there may not be; I say, as a lawyer, that it can be made.

4909. That is, if these clauses are sufficient for the purposes?—Certainly.

4910. You think they are sufficient for the purpose?—Certainly.

4911. Without committing you to other clauses, you do not object to these, as to which my friend has asked you questions, but you think they are sufficient and adequate to the purposes?—Certainly.

4912. Therefore, I may take it, so far as the penalty clauses are concerned, you think it is the best of all possible Bills?—I do not think it is the best of all possible things to have a penalty laid upon me at all, but I say there would be no difficulty in convicting you if you were the gas company and I the complainant, I should have the greatest possible confidence in convicting you if your illumination was not as it ought to be.

4913. You told the Committee that, in your opinion, those clauses are fully adequate for the purposes?—I say for the purposes of convicting the company before a magistrate, you have only to take a proof that the illumination is not what it ought to be, or the purity is not what it ought to be, then the magistrate would immediately convict.

4914. Does it not strike you that that "only" may be surrounded with difficulties?—In my judgment it is not so.

4915. I apprehend that all these penalty clauses are controlled by the 25th section?—No, the purity is defined, and the illuminating power is defined.

4916. Do you mean to tell the Committee that, in your opinion, any application before the magistrate would not have to be controlled, as regards evidence, by the 25th section?—All that the 25th section says is, that the illuminating power shall be as prescribed; there is nothing else in the section.

4917. I ask you whether, on an application before a magistrate for conviction,

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the evidence would not have to be directed to the test of the illuminating power and want of purity, as defined in the 25th section?—Clearly.

4918. If that section be inadequate to the purposes, the penalty clauses founded upon it would be inadequate?—If it were inadequate; if the one were inadequate the other would be inadequate.

4919. Then the 25th section, being the basis of the test of the want of illuminating power and purity, as it will have to be proved before the magistrate, if that is inadequate for the protection of the consumer the penalty clauses fail?—The question is a very involved one, but I suppose you mean that if section 25 does not define accurately what the purity is, or what the illuminating power is, nobody can convict?—If it did not define it properly there could not be a conviction.

4920. What I mean is this, that when the matter was brought before a magistrate to convict, the want of illuminating power and purity would have to be proved in conformity with the 25th section?—Certainly.

4921. Do you approve of the clauses that require notice to be given to companies before any inspection takes place?—It was thought desirable at the time that some officer of the company should be present at the examinations, and therefore that three hours' clause was put in for the purpose of enabling him to have notice; but in practice the companies have never enforced that clause; I understand that they forego it.

4922. That is not quite an answer; you approve of the provisions that the companies shall have notice?—I asked at the time that the clause was put in that they should have the three hours' notice.

4923. Do you approve of the Act as it stands, containing the provision that the company should have three hours' notice?—I do not ask the Committee to retain that three hours' notice; the companies are perfectly willing to let the examiners go in without any notice at all.

4924. Then you do not approve of the clause being retained?—I approve of its being retained, but I would not press it on the Committee.

4925. You did approve of it in 1860?—I think it is highly desirable, when any experiments are taking place, that the parties against whom they are made shall be present to see that they are properly conducted

4926. There might be a party present on either side without any notice at all?—How could you insure that; if you could insure that without notice I would not ask for notice.

4927. You might walk into the companies' office and ask the inspector to accompany you to a particular spot?—If he happens to be there.

4928. Then you must go again if he is not?—That would be giving notice.

4929. Not necessarily three hours, it might be five minutes?—The companies do not press that; they are willing to open their works at any time.

4930. Do you approve of the suggestion with regard to the chemical board?—Yes, fully.

4931. To be paid by the companies?—Yes; I am satisfied from my intercourse with the first chemists in England that at present the chemical observations upon the testing of gas are exceedingly incomplete. When I have asked them to give me methods of testing, they have said, "We must have an extended series of experiments before we venture to give you any recommendation."

4932. *Chairman.*] It is your own suggestion?—Yes.

4933. But, at all events, the chemical board for the time being would act upon the present state of knowledge?—Certainly.

4934. Now, my question was directed to this: would you think it right that such a chemical board should be paid by the companies?—Certainly.

4935. But should be appointed, I suppose, by the Secretary of State?—Certainly; I think—I know, in fact—that the companies are so anxious that this matter should be set at rest between themselves and the public, that they are employing the proper mode of purifying the gas, that they would be thankful to have a board appointed entirely independent of themselves, to prescribe how it could be done.

4936. I think the 37th clause, which suggests the limit of the charge for gas supplied to the public lamps, was a clause introduced at your suggestion?—No; certainly not.

4937. Did you prepare that clause in obedience to a recommendation from the Committee?

Committee?—It was imposed upon the companies by the Committee at the suggestion of Mr. Wyatt. Mr. *R. Baxter.*

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4938. Can you tell me who introduced those words, "otherwise than by special contract in writing"?—That was a term suggested by the companies in modification of the clause.

4939. So far as regards the clause was modified or affected by these words, they were introduced at the instance of the companies?—Certainly.

4940. Probably you will agree with me in thinking that those are very material words in the clause?—Very material words.

4941. And perhaps may suspend its operations?—Not at all. We have had here what certainly astonished me very much, parties complaining of the price of gas lamps, and in no one instance have they ventured to say that the company is charging more than 4 *s.* per 1,000 cubic feet of gas now.

4942. Are you prepared to advise the companies to assent to meters to every 12 lamps?—I could not recommend the companies to give meters to every 12 lamps, because I know as a fact, that where the same pressure exists on the main to each lamp, and you put a meter between the main and the lamp, that there will be less gas burned at the lamp with the meter than burned by a lamp without a meter necessarily.

4943. Then you perhaps concur in the conditions that the companies imposed, that there should be a meter to every lamp?—If they desire the meter, to have a meter to every lamp.

4944. You think that that would be reasonable and proper?—If they desire the meter, certainly, I think; I think it would not be proper that the company should only be paid for as much gas as is burned filtering through a meter, when more gas will be burned by a lamp that has not the meter.

4945. Now, I observe the 46th section of the Act says, "That every order or conviction of any magistrate in respect of any such penalty" is subject to appeal; that, I take it, is an appeal to the Court of Queen's Bench; it would go to the quarter sessions in the first instance, and then to the Queen's Bench, probably?—Yes; the penalty, I apprehend, applies to the penalties not specially provided for: "Every penalty imposed by this Act, the recovery and application of which is not otherwise specially provided for by this Act, shall be recovered on summary conviction."

4946. Have you any doubt, as a lawyer, that if a conviction were obtained by an individual against the companies, that that conviction could be taken up to the quarter sessions and the Court of Queen's Bench?—I see the 32nd section says, that this particular conviction that is pointed to there, shall be final and binding on all parties; I infer, as a lawyer, but of course my legal opinion may be wrong, there are those much more competent than I to form it here, that that would not admit of an appeal.

4947. Now read it with the 46th section?—The 46th section applies to every other penalty than that. I beg your pardon, the 32nd section does apply to a penalty; "Order the company to pay any penalty or penalties thereby incurred;" that is for conviction under the 30th, 31st, and 32nd sections of the Act; and with regard to conviction under those sections, I apprehend the proceeding is final; then, with regard to every other penalty, there should be an appeal given by the 46th section; that is my reading of it, but you are much more competent than I am to form an opinion upon it.

4948. Look to the 46th section: "Every penalty imposed by this Act, the recovery and application of which is not otherwise specially provided for by this Act, shall be recovered on summary conviction." Well, now that 32nd section does not contain any application provided for?—The 53rd section states, "All penalties or sums of money ordered or adjudged within the City of London and the liberties thereof;" that was put in by the Board of Works: you are much more competent to form an opinion that I am.

4949. At all events I have a right to have the benefit of your judgment upon the question. I will ask you whether you represent to this Committee, in your opinion, supposing a conviction to be flagrantly wrong, that there is no power of appeal to the Queen's Bench or the quarter sessions?—My apprehension is that, under the 32nd section, any conviction taking place under the 30th, 31st, and 32nd sections is final and binding and not subject to appeal.

4950. But then, under the 40th section, which imposes the penalty of which the recovery and application is not otherwise provided for, I want to know whether

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whether there would not be an appeal even without these words: "Every order or conviction shall be subject to appeal;" but with these words whether it is not clear there is an appeal?—I do not think there is any appeal for a conviction under that section.

4951. I suppose, if there be an appeal, that would lead to considerable delay and expense, which the companies would be interested in carrying out?—If the companies were convicted in a penalty of 50 *l.*, the question of delay would amount to nothing there; there is a conviction; are they to go on keeping their gas below the purity; they may be convicted again the next day; an appeal against one conviction would not enable them to go on supplying bad gas intermediately.

4952. Do you believe any private individual would go for a conviction, when there might be an appeal to the quarter sessions and to the Court of Queen's Bench?—Yes—you ask my opinion—I do.

4953. It is worth his while; you think so?—Oh, certainly.

4954. You think it is worth the while of a private consumer being subjected to the difficulties of the 25th section, providing for the illuminating power and want of purity, and then having the chance of an appeal, which the companies might take to the Queen's Bench?—If I thought the companies had produced all the mischief described to us at Messrs. Morrison's establishment, I should have thought no amount of money they could have spent in the Court of Queen's Bench, or elsewhere, would be for a moment thought of in proportion to the evils complained of.

4955. I presume, on the hearing before the magistrate, there must be evidence on both sides?—Of course.

4956. And then you have the chemist brought there by the private funds of the consumer contesting with the chemist brought with the public funds of the company; would that be the fact or not?—The fact would be, of course, that the chemist of the company would be heard as well as the chemist of the consumer; but the chemist of the consumer tests the gas to-day and goes before the magistrate to convict upon that test; it is a great chance whether the company have a test on that day or not, and if they have not, how can they contradict.

4957. At all events, I think, you will concede this to me, that the proceedings for the conviction would involve a very difficult and elaborate inquiry on the part of the consumer?—Just the elaboration of bringing half a guinea out of his pocket and paying the inspector, who must then make him a report; that is all.

4958. Do you mean to say that any magistrate would convict in the absence of the companies and their witnesses?—Certainly not; but if a consumer goes to an examiner and gives him half a guinea, he is bound to make him a report, and then he can summon him before the magistrate to prove his report to be the fact, and upon that report the magistrate would convict, unless the companies proved the contrary.

4959. Mr. Serjeant *Kinglake.*] By the 31st section you must give notice both to the complainant and to the gas company to appear to be heard?—Certainly.

4960. Mr. *Webster.*] Then would not an inquiry of this kind, to obtain a conviction, involve a hearing of the most expensive character on each side?—I think not, indeed.

4961. Mr. Serjeant *Kinglake.*] The Act says, "they may be heard before a magistrate, by themselves, or their counsel, attorneys, or agents"?—Any course of law you suggest.

4962. Mr. *Webster.*] I presume, if the test had been applied at a place more than 1,000 yards, any evidence from such a test would be inapplicable under the 25th section; supposing it should turn out that the test had been applied at a place more than 1,000 yards from the works, that would be a fatal objection to the evidence under the 25th section?—The 25th section merely, as I said before, defends the light.

4963. No; the words are, "the quality of the common gas supplied by the company shall be with respect to its illuminating power at a distance, as near as may be, of 1,000 yards from the works," so and so; I ask you whether any evidence that may be adduced of want of illumination or purity at any other distance in excess of the 1,000 yards would not be rejected at once as wholly inadmissible?—I think that the examination must be, according to this section, appointed within the 1,000 yards.

4964. You

4964. You referred to the proceedings taken by the Secretary of State, at the instance of a vestry, against the Independent Company?—I did.

4965. And there, I think, the excuse was that the purifiers were out of order?—Yes.

4966. Would it not have been perfectly competent in that case, and must there not have been evidence given that the purifiers were out of order?—If it were the fact, it would no doubt have been so.

4967. Is it not the fact that that and other excuses would involve a lengthened inquiry before any tribunal?—Here they went, as I say, to the Secretary of State, and the Secretary of State ordered Dr. Letheby to inquire, and ordered the company to pay the expenses of the inquiry; I do not suppose that the parties would have spent 50*s.* in the whole inquiry, putting the Secretary of State in motion, and having a remedy applied.

4968. Of course, if there has been any local inspector appointed, any examiner by the local authority, that clause will not apply?—The clause which says that upon payment of half a guinea he shall have a report, will not apply; but it is still competent to him to ask for a test, or seek another test and convict upon it.

4969. It is competent for him to do that under the 32d section?—Yes, he is not shut up to the examiner; he may take anybody else he likes.

4970. That is to say, if he thinks fit to lay a complaint before the magistrate, before whom both parties may be heard, for a conviction, and the conditions of the 25th section apply, he may do so?—Yes.

Re-examined by Mr. *Denison.*

4971. There would be one cheaper mode of doing all this, and that is to provide that the magistrates shall decide after hearing one side only; that would be cheaper?—That would be cheaper, but not according to English practice.

4972. Can you invent any way in which he is to hear both sides, without having some such machinery as is provided by this clause?—It does not appear to me that it can be so, but I am not quite sure; I may say, on behalf of the companies, that they are quite willing that the cheapest, speediest, and most practicable mode of determining any of these questions that can be suggested shall be adopted.

4973. Consistently with hearing both sides?—Of course, no English judge would wish to do other than that.

4974. But some English counsel seem to do. Now, about the 1,000 yards' clause, I think I may ask you this, from the recollection of all of us here who were engaged in 1860, that provision about 1,000 yards, whether good or bad, was suggested by the promoters of the Bill of 1860?—I think it was; I am not prepared to say that I distinctly remember.

4975. Now about section 25, so far as purity is concerned; I do not see that the 1,000 yards have anything to do with that, have they?—Oh, nothing whatever

4976. I think you remember Dr. Letheby himself said, that he suggested the words in the Act of 1860?—With regard to the 1,000 yards, Dr. Letheby, in 1860, said he considered gas lost illuminating power by travelling, and the 1,000 yards was put in as a matter of fairness to the company, that if there were that loss in travelling, the company should not be answerable for it, if they produced the gas of the proper illuminating power at the end of the 1,000 yards.

4977. Mr. Alderman *Lusk.*] We have had evidence to show that the gas does not deteriorate in quality?—If the illuminating power at the end of six miles must be 14-candles, it would have to be made about 17 candles at the works, in order to supply it at 14 at the extremity; the Committee would have to judge which it should be, but they are two very different things indeed; you can make 14-candle gas out of Newcastle coal, but you cannot get a higher illuminating power from it.

4978. Mr. *Denison.*] When you say, or when Mr. Hope Scott said, under the instructions of your companies, that he was prepared to give 14-candle gas, he meant 14-candle gas tested at something like 1,000 yards?—Very much under the same conditions as prescribed by the Act of 1860.

4979. You never meant to commit yourself to what I suppose you would call the absurdity of offering to give 14-candle gas at a definite price at a distance of

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some three or four miles?—That was not intended, because if so, you must add, according to the distance, two or three candles to the gas.

4980. You would in fact, be really binding yourself to give 17-candle gas, which means gas from cannel coal?—Evidently so.

4981. One word more about clause 25; my learned friend says, the penalty clauses, most of them, are hung upon clause 25, but it is under clause 25 that Dr. Letheby has been giving the evidence that he has about impurity?—Entirely; there is no other clause that defines what the impurity shall be.

4982. Then if the people who put Dr. Letheby in motion had taken him to the magistrate, he could have given to the magistrate all the evidence about impurity that he has given here?—Certainly.

4983. And he has found no difficulty in it?—Apparently not; he gave a report to Sir George Grey, when he was referred to from the Home Secretary, and I presume he gave the same evidence before the Commissioners of Sewers when that conviction was sought for in the City.

4984. One of the objects of the Board of chemists that you suggest, is to make that examination still more decisive and easy?—To make the test as easy as possible, but particularly to see that everything that ought to be done for the purpose of purifying the gas is done; we should wish the Board to be composed of the first chemical men of the age, so that the public may be satisfied that everything that can be done is done.

4985. Mr. *Woods.*] Do you propose that the chemical Board should have the power to determine what is to be the quality, or that it should only see that the quality prescribed by the Act is supplied?—You mean the quality as to purity.

4986-7. Yes?—They would have two things to do, I conceive; first to look at the company's works and operations, and see if they are using every thing that ought best to be used to purify the gas; having done that, they ascertain, as chemists, what is left in the gas after every effort for purifying it has been tried, and then, supposing it to be five grains, 10, 15, 20, 30, 40, or 50 grains, that they find still left, they, of course, would suggest a standard that there shall never be more than that; and then they would prescribe a test by which you shall ascertain whether it be there or not. As to the conviction, the most simple mode is this: Dr. Letheby has suggested that you shall have a Board of examiners continually sitting and making the experiments which shall be open to the company, and the company would have their Board which shall be open to the local authority; he proposes that there shall be a head chemist, and supposing the experiments of the local authorities differ from the experiments made by the company the head chemist shall come in and say who is right; his decision shall be final and binding upon the company.

4988. I cannot quite understand; it is one thing to give the Board the power under the Act of determining in the future what degree of purity there shall be, and it is another thing to commit to the Board in the future the power of observing and reporting that the purity is such as is defined by the Act; which do you mean?—The Board of examiners, I apprehend, would be simply to prescribe once, or if not for ever, for a limited period; you might think it expedient to recommend that the Board should be reconstituted every five years, so as to take advantage of the improvement of science, but when they have made their report they have done with it; then the testing of gas continues day by day; the gas is now tested burning all the day to ascertain the purity, and every day the residual products are taken and analysed; that is going on all the year round and every day, and must go on all the year round and every day, and for that purpose there will be an office to test the gas of each company, and a person continually at work testing it, reporting it, and recording it.

4989. Then, do you propose that the quality shall be now defined by the Act of Parliament, or that the Board should have the power?—The Board must have the power of defining the quality, because the Board is to search how far it can be purified, and what ought to be the utmost of the sulphur or other bad constituents left in the gas.

4990. Then you propose to leave the degree of purity open to be determined in the future?—It must be, unless the Committee should feel that their own knowledge of chemistry is such that they can now prescribe, in words and figures, the methods of purifying the gas, and the quantity in grains of sulphur, or some other test of ammonia that may be left in the gas.

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4991. Mr. *Denison.*] I was going to clause 37; my learned friend asked you a question about those words, "otherwise than by special contract in writing," whether you approve of them; but he, by accident or design, omitted to ask you why they were introduced?—The reason for them is that gas companies make special contracts; a man is consuming a great mass of gas upon a very limited area of premises, with very little trouble or risk to the company, and they may say, "We can afford to let that man have his gas at a less price than a consumer who takes a more ordinary quantity;" well then, as each public gas-lamp constitutes a separate consumer—in point of fact, there is no accumulation of light there—they have no right to take advantage of the benefit which a customer who consumes a very great quantity within a small area has a right to expect.

4992. That may be wrong or it may be right, but that is the contention of the gas companies?—That was the reason of the insertion of the clause.

4993. And if it were not so, I think I may at once ask you this; it would limit you very much in giving to large consumers the benefit of their large and condensed supply?—Certainly.

4994. So that they would lose, but the public lamps would not gain?—Yes.

4995. Only one thing more, and that is the question upon clause 46, where my learned friend thinks there is an appeal; in some things there certainly is; now, first of all, you observe yourself that the appeal is only for such penalties as are not otherwise specially provided for in the Act; besides those clauses I read you before, you will find in clauses 9, 12, and 17, other penalties for which there is no special provision in the Act?—Yes.

4996. So that there is something for clause 46 to operate upon, besides those things in clause 32?—Certainly.

4997. But there is a more material distinction than that; clause 32 gives the important power you know of making final orders independently of penalties; orders of things to be done?—Yes.

4998. I think you will find nothing in clause 46 giving a power to appeal against any order except in respect of penalties?—It seem to me that it does not, certainly.

4999. So that what I said in my examination in chief is right, that the magistrate may make final orders unappealable about anything that is done?—It seems to me clearly so upon the words of the statute; but, as I said before, if the learned Counsel who is opposing the companies can show any more clear method of defining the penalty and recovering it with less expense and less trouble, only let him suggest it and I am quite sure the companies would be willing to adopt it.

5000. Now, about the reserve fund, I must ask you this question in history; the accounts of the company were called for in 1860, were not they?—Very generally.

5001. If you will just look at that, you will be able to answer the question shortly (*handing a document to the Witness*); it appears distinctly upon the reserve fund?—The return to be given in 1860, and laid before the Committee, included the amount of the reserved fund for each last five years.

5002. So that that at any rate was fully inquired into, and all the capital besides?—Yes.

5003. My learned friend asked if you knew of any other company which had been specially allowed to make up back dividends for more than six years; it is a fact, every company is allowed to make up back dividends for an unlimited time, unless there happens to be a clause put into their Act to prevent them?—Certainly.

5004. Is that the case with a great many companies?—It is the general law of the kingdom; the restriction is the exception, not only in point of law, but in point of practice.

5005. My learned friend fished up out of all England four companies which had been limited to less than six years; is that consistent with your general experience and recollection?—I think the restrictions are very limited indeed; I have had a great many Gas Bills, and I do not know that I have ever had it imposed in any one Gas Bill, except the Metropolitan.

5006. Mr. *Woods*] I believe, since 1862 or possibly 1863, no preferential railway

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railway dividend is payable backward, is it; it must be paid out of the profits of the year?—With exceptional circumstances.

Mr. *Denison.*] It only applies to new capital, not to old.

5007. Mr. *Woods.*] My question is, that the dividends on any preferential railway stock created since 1862, must be paid out of the income of the year?—That is the rule now.

5008. Is it not the general law?—I think it is now; it was put into the Act of last year.

5009. Then it is the general law of England?—Yes.

5010. Mr. *Morrison.*] You understand clause 27, I suppose, to be binding on the companies with regard to testing the gas?—Certainly.

5011. Is it not equally binding on the local authority?—Yes, it absolutely commands the local authorities to have the testing, but they have not done it.

5012. Only one or two have done it?—The companies in every case have erected testing houses according to the command of their section.

5013. Can you tell me who pays for those testing houses provided by the local authorities?—They pay themselves, and pay their officer, and it is the payment that creates the difficulty.

5014. It has been suggested as one important point in the examination of the purity of the gas by the local authority, that he should have the control of the service pipe from the main; I presume the companies would not have any objection to that?—Not the slightest.

5015. Supposing a company is paying 10 per cent. dividend, and has got its full reserve fund, and the penalty is imposed upon it by the magistrate, who pays that penalty?—It is like everything else, it comes out of the profits of the company, of course.

5016. Then the consumers pay that penalty?—That would be so as far as the money goes, but the moral consequence, if I may speak of moral consequence attaching to a company, of a company being convicted often or more than once upon a matter of that kind would be very serious to them.

5017. In what way?—Upon the next application to Parliament, if you show that a company has been convicted 20 or 30 times of default in gas, Parliament would probably let some other company take its place; that is the penalty which lies over them.

5018. The companies have not received any convictions, and I do not think the Corporation has suggested any mode of improving these clauses as to the mode of procedure at all?—I have heard no suggestion on behalf of the companies; I am quite willing to welcome any suggestion that will make them more practical, or make them more speedy or less expensive.

5019. I understand you to say you think if the present Acts are not much interfered with, that the gas shares will be a very good speculation; they are all likely to pay up their income of 10 per cent., and in that case there will be no objection to a continuous testing, as described by Dr. Letheby as taking place at Paris?—None whatever.

Mr. *Denison.*] Our Board is meant to be a continuous Board.

5020. Mr. *Morrison.*] Do you know of any instance in which Parliament has sanctioned competition between corporation gas or waterworks and the works of existing companies?—I do not remember at this moment; where corporations are in competition with people within their own boundaries it would be a very unequal and a very unfair competition.

5021. I do not know whether it is a fair question to put to you, whether it has ever been considered by the companies, supposing it was suggested that anybody representing the inhabitants of London should treat with the companies for the purchase of their interest, whether they would be favourably received?—Perhaps the Honourable Member is aware, from experience, when a company is put into a position of owning works and carrying on works, they are always unwilling to part with them unless you can offer them any good pecuniary consideration; I daresay 30 years' purchase would tempt all the companies.

5022. Can you inform the Committee what is the present position of the reserved

reserved funds of the companies?—I could furnish it to the Committee; I have it not before me now.

5023. Do you claim to lay by a reserve fund upon the debenture debt as well as upon the actual share capital; supposing there are capitalised profits or additional capital raised, at seven-and-a-half per cent. interest, do you claim to lay by a reserved fund on this?—Clearly that would be part of the capital; but it is very little consequence to the public how much reserved fund is laid by, because when it is complete the income of the reserve fund goes into the profits and reduces the price of the gas; it is a very small matter.

5024. I find by the returns to Parliament in every instance balances are carried on to the following year. That seems to imply that every gas company's reserved fund is fully completed?—It is not so; the fact is, that they make up the return to the Secretary of State at a given date, and in many of the companies they have not then made the dividend out of their earnings, so that what would have disappeared if the dividend had been paid is carried over as balance, because the dividend has not been paid.

5025. You know that Mr. Moore asked for a certain return?—Yes.

5026. I presume I may assume that that is correct?—As far as I have looked into it.

5027. In the case of one company, the Independent Company, the capital is put down at 150,000 *l.*?—Yes.

5028. And in 1863 they pay 10 per cent. or 15,000 *l.* clear?—Yes, and five per cent. for back dividends.

5029. Now, I find that the share capital of the company consists of only 120,000 *l.*, and that that additional 30,000 *l.*, which makes up the 150,000 *l.*, is capital on which only $7\frac{1}{2}$ per cent is payable. I just call your attention to it?—I think the fact is, that the reduction to $7\frac{1}{2}$ is not yet passed by Parliament in the case of that company: the company was before Parliament this year.

5030. But the case to which I refer was in 1863, since that they have capitalized 30,000 *l.* additional capital?—I could furnish an explanation of that, but I have it not here.

5031. May I ask you if you have examined the returns put in by Mr. Hughes?—I have.

5032. Are they correct?—There are some discrepancies in them; in some cases he has understated the capital—very nearly in every case; and, as regards the Independent Company, he has very much overstated the profits; he put in a balance of 14,000 *l.*, I think, into the year's income, which balance was brought over.

5033. With regard to the column headed "Per-centage on Share Capital," Mr. Hughes' return seems to show that every company has made a larger dividend than it is entitled to?—Yes.

5034. Can you explain that?—That is not the fact.

5035. Mr. Serjeant *Kinglake.*] I think he has calculated the dividend, not only on the amount of capital, but also on the reserved fund?—I do not think he has a column for what the company actually paid; only what they have earned.

5036. Mr. *Morrison.*] Would you be able to inform the Committee what the capitals of the company have been from time to time, what is the amount of interest they have paid out of their reserved fund, and how far they have reduced their price of gas, as they have passed the 10 per cent. limit?—Yes; I can get, Sir, the return of the reserved fund of each company, which, probably, would answer that question.

5037. For instance, if you look at Mr. Hughes' return, you will find in the South Metropolitan, the capital being put down as 191,000 *l.*, in one single year they are stated to have put to their reserved fund 20,000 *l.*?—I apprehend there he must have brought forward a balance standing to the fund before.

5038. Mr. Serjeant *Kinglake.*] Do you know any instance of any company after having paid the 10 per cent. and completed the reserve fund, in which the reduction of the price of gas has been enforced by the quarter sessions?—I do not know any case in which it has been enforced by the quarter sessions, but in the case of several of the London companies they have realised their reserved fund, and they have at once reduced their price.

Mr. *Richards* stated with regard to the capital of the Independent Com-

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pany, the 150,000*l* represented as capital, was 120,000*l.* share capital, and 30,000*l.* debenture capital; the next column in the return showed the rate of dividend paid by them; they paid $8\frac{3}{4}$ per cent. and so on, upon the 120,000*l.* for their share capital, but upon the 30,000*l.* they only paid $4\frac{1}{2}$ per cent.

5039. Mr. Serjeant *Kinglake.*] As I understand your answer, it is that there are one or two companies, the names of which you do not know at present, who have first of all paid the 10 per cent., have realised the whole amount of the reserved fund, and the consumers have had the advantage in the reduction of gas from the surplus profit?—Yes.

5040. Perhaps you will give us the names?—You shall have them, certainly.

5041. Now, with regard to another important matter, I understand your scheme would be this: that a chemical Board should be established, and they should exercise all their ability for discovering what is the highest rate of illuminating power that can be reasonably given to gas in London; that they should state what the illuminating power should be supplied by the gas companies?—Not the illuminating power; that should be prescribed by the Committee, because they have sufficient practical experience upon that head; but it is the inquiries that involve chemical science—inquiries after impurities.

5042. Should they turn their attention as to the best mode of establishing what is the illuminating power of the gas?—We have no objection whatever to that.

5043. Then you would have that laid down with precision, so that all companies should apply the same process?—Certainly.

5044. And any person in whose hands the testing was placed, should apply that process, and none other?—Certainly.

5045. With reference to what is called the testing the purity of gas, do you apply their knowledge of science to that to lay down some definite mode whereby the impurity of gas should be discovered?—Exactly.

5046. And in the same way some definite and certain mode as to the method of testing, and the materials to be used, should be defined and fixed by them?—Certainly.

5047. And for a certain time there should be tests whereby the impurity of the gas should be tested by any person whose business it was to test it?—Precisely.

5048. Mr. Alderman *Lusk.*] Might I ask you if you think the public or the consumer exists for the benefit of the companies, or the companies exist for the benefit of the public?—The consumer exists for his own benefit, and the companies exist for the purpose of paying themselves 10 per cent., and then a surplus benefit for the benefit of the public.

5049. Granting that, we start fair. The company make as much out of the public as they possibly can; you admit, I suppose, that the company possesses great privileges granted by Parliament?—Certainly.

5050. I suppose you will admit, too, that seeing they have got these great privileges, they ought to be under very stringent regulations?—Certainly.

5051. Because the tendency of men is always to look after their own interest in all particulars?—Certainly.

5052. Now, you said it was a simple matter for a man to get at a company where he thought he had a wrong?—Yes.

5053. You said he had nothing to do but to go to an examiner?—Yes.

5054. What is a man to do where there is no examiner at all?—Then he must go to Dr. Letheby.

5055. But Dr. Letheby perhaps would not come?—Then he is lost.

5056. We are inquiring into the operation of the Act of 1860?—That would be entirely cured if you take Dr. Letheby's suggestion of abolishing all other local authorities but the Commissioners of Sewers for the City of London, and the Metropolitan Board of Works for the other parts of the metropolis; compel them to appoint examiners, and then you have the men to whom the consumer can authoritatively appeal.

5057. I was speaking about the alteration of the late Act, and you admit in this case it is very defective?—No, I do not.

5058. But here is the case of a poor man who has no remedy?—If he be without a remedy, it is because his local Board has not obeyed the mandate of the

the Act of Parliament, which says, the local Board shall appoint an examiner.

5059. But I sit here as a legislator, and I look to the good of the public and to the operation of the Act; as a just judge, I am to see whether the Act operates well or ill for the public?—In that investigation you will find that the local authority has not done its duty, and therefore as a legislator probably you will think it well to abolish the authority of the small local Board, and vest that authority in a more central Board that will obey the law.

5060. Then the conclusion you come to is, that it will require a new Act?—There must be a new Act, if there is any alteration in the present one.

5061. Now, you say it is a very simple thing for a man to go and fight in a court of law; my experience of courts of law is, that it is not such a simple matter to go against a large company, and more particularly when they have such a good solicitor as you are; you think it is a very simple thing?—I should be very sorry to be put on my defence, you being the accuser.

5062. Now, take one of the districts where there is a just complaint against a company; is it an easy matter for him to go into a court of law?—Why, a quiet man would not do it; but we have had gentlemen in the chair in which I am sitting now, in the course of the last week, to whom it seemed to be a great delight to do it; and my astonishment has been that they have not taken that mode of agitating, instead of troubling the Committee here by occupying their time in giving evidence.

5063. But should not a quiet man have justice from the company?—Certainly; the quieter the man is, the more secure he ought to be in the possession of his right.

5064. You know a man may get his watch and pocket-handkerchief stolen in the street, and, rather than make a trouble and bother in a court of law, he will get away altogether?—No doubt about it.

5065. And many a man who receives injury from the companies, rather than be bothered in a court of law, would leave them alone altogether?—No doubt; but if I wish to be submissive, and not to enforce my rights, would not you allow me to do it.

5066. But we want to make a law so that the poor man may be able to enforce his rights?—I assume that the provisions of the law are such; and I say, on behalf the companies, distinctly, if any one can suggest a mode by which the matter can be more perfectly dealt with, the companies will welcome the suggestion.

5067. You mentioned that a man might appeal to the Secretary of State; now, that is a dreadful mode of getting at anything in a roundabout way?—I am afraid you have not looked at the provisions of this Act of Parliament; in the case I have quoted, the vestry made an application to the Secretary of State, and immediately the Secretary of State was put in motion, he sent for Dr. Letheby; sent Dr. Letheby to the works; Dr. Letheby made his report, and in a few days the Secretary of State made the order; the party complaining would not have to attend at all, nor pay one single sixpence for all that was done.

5068. But many people would not know how to go about that?—Certainly not.

5069. You mentioned that if the public let the companies alone, they would soon have gas cheaper?—I have no doubt about it at all.

5070. Do you think if the public had allowed the East India Company to keep their monopoly you would have had tea cheaper?—The companies are very much nearer home, and they have very much more watchful eyes, and the civic authorities particularly keep a keen eye upon them, and they therefore dare not do what perhaps the East India Company, having their possessions at so great a distance, and with a Legislature very unwilling to interpose in East Indian affairs, would have ventured to do with impunity.

5071. Do you know any case where any of the ameliorations which we have obtained in modern times would have been granted; do you think, if the public would lay still and be content, they would have got any of these things?—I do not at all quarrel with the agitation that has arisen; there is no doubt it will lead the public to be satisfied with what they are so much inclined to complain about, and when they know that that ancient institution, the City of London, has come forward for their defence, and has investigated the matter, and that a large Committee from the House of Commons have been kind enough to sit patiently to

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hear the matter, no doubt they will be then satisfied that justice is done, and the gas companies may go quietly about their business without any further expense or disturbance.

5072. But seeing the public are told that they might get gas at 3 *s.* per 1,000 feet made in abundance, and of first-class quality, do you think it is wrong for them to make some agitation, and try to get the companies to bring the price down?—It is quite right for the public to get gas as cheap as they can; but wanting to have it cheap, they first ask the Corporation of London to lay out more capital, upon which they must be paid interest, and interrupt the flow of profits to the companies, which leads to a reduction in price; I have no doubt ten years hence, if we live as long, and the gas goes on as at present, you will have gas very nearly at that standard price throughout the City.

5073. I am not speaking about the City of London at all; I am speaking about the metropolis; I say the public in the metropolis know that in Manchester and in 50 other places they can make gas and sell at a fair profit for 3 *s.* the 1,000 cubic feet; don't you think the public have a right to see about getting their present price reduced in some shape or other?—What you want the public to understand, and the public is not very quick at understanding, is this, that the circumstances of those places differ from the circumstances of London; that were these companies in London, and under the circumstances in which the London gas companies are placed, they could not make gas cheaper than the London companies make it. I have this broad fact before me, which, as a man accustomed to the business of life, I place great value upon; here are 13 distinct companies, each one trying to make gas cheaper than another, because the company that has the cheapest gas has the best credit, and the more the stock of the gas company is worth; if I find 13 companies upon a very large scale doing their utmost to economise, and they cannot pay their way upon less than the 4 *s.*, I am satisfied it cannot be done; and if any man comes and tells me "I will do it for 2 *s.* 6 *d.*," it will be like the gentleman in this chair yesterday, who, when he was asked what dividend he paid, said he paid in five years one dividend of three per cent. upon part of his capital.

5074. I happen to have a little knowledge of the world, and if a man tells me he can give me a thing at 2 *s.* 6 *d.* a pound or a foot, in abundance, as much as I please, I do not ask the other man what he can produce it for at all, but I say, "You do not produce it properly"?—As a man of the world, you would not only ask "Will this man give me my gas to-morrow?" but "Will he give it me continuously?" Now, you had such a man in this chair yesterday, and he said, "I undertook to supply the Great Western Company with gas at 2 *s.* 10 *d.*, and I have done it; he was asked what he had made of it, and it was just that, that in five years he had paid one dividend of three per cent. Now that man cannot live; that institution cannot go on; he will cease to supply gas to the Great Western Company, and there will be an end of it. Then if you have been stopping the profits of a company that could cheapen its gas if it were let alone, you are raising the price of gas against yourself by the very effort to reduce it. You cannot have a thing purchased for less money than it costs, and if you have 13 people upon a large scale, and men of first-class ability applying all their talent to produce cheap gas, it is very unlikely that any individual can produce it cheaper than they can produce it.

5075. But people say that they would guarantee to produce gas for 3 *s.* per 1,000 cubic feet or less in London, in the metropolis, and in any quantity you please?—You had that case in the Great Central Company; they undertook by solemn deed and covenant to furnish your gas at 4 *s.* per 1,000; when they came to me a little before the Act of 1860, they told me they could not pay their way, and could not do it. The question was debated before the Committee of 1860; the City of London were here watching the proceedings, and the question was before the Committee, Were they to be allowed to raise their price from 4 *s.* to 4 *s.* 6 *d.*; the Chairman said, "Why should you make this company an exception?"

5076. That can be done at Brighton, for example; why cannot it be done here?—I do not pretend to understand the price of labour or the price of coals in Brighton.

5077. Do you think that some of the London companies have an excessive capital?—That depends upon what you mean by "excessive capital;" if you ask me whether if the works of any one of the companies were to be made anew,

at

at the cheapest cost at which they could be made, the capital required would not be so great as that already existing; I daresay they could be built for a cheaper sum than they have spent as their capital upon it.

5078. If they erect too many works and inefficient works, is it fair that the public should have to pay for them?—But the fact is, in every gas company (I know them all in London) they have not erected too many, but too few; they are enlarging them every year, and they have done it very efficiently too; we have a large gas establishment within 300 yards of the Houses of Parliament here, and nobody knows of its existence; they do it so well and so perfectly, that nobody knows that there is a gas establishment there.

5079. You mentioned a little while ago something new to me altogether, that the gas works would not offer to supply gas of 14 candles beyond 1,000 yards from their works?—Yes.

5080. Then, supposing I am a consumer of gas more distant from the works, I do not get gas of 14 candles?—You would not, supposing that theory to be correct that the illuminating power diminishes by travelling.

5081. But the chemists tell us that it does not diminish?—I have heard Dr. Letheby state before the Committee that he believes gas travelling three miles would lose two candles; I think he modified that opinion considerably, but there is a very strong opinion that it does diminish.

5082. Then if it is only those people who live within 1,000 yards who would get the 14-candled gas, there would be very few of the people getting 14-candled gas at all?—That is so: and if the gas companies were to be removed six miles from the metropolis, which some men propose, what would be the light of the gas which would come from the end of six miles would be a serious question.

5083. Assuming that the gas deteriorates?—Yes.

5084. But it is proved to us that at Manchester it does not deteriorate?—Dr. Letheby was my authority for that; I know he has modified his opinion to some extent, but it is a serious question.

5085. Here is the case of a company who have increased their capital, and in addition to the company's present capital of 900,000 *l.*, there is by this Act created in respect of divisible profits of the company expended by them for purposes for which capital is properly applicable, a capital of 300,000 *l.*; is that the way the companies use the reserve fund?—No; that was in days when they did not form a reserve fund, but in the good old fashion of companies in my early days, when they used to pay very small dividends and lay out the remainder in the improvement of their works; that was the habit of companies 50 years ago, but it is not the habit of companies now.

5086. But this Act applies to this Session?—That is for profits laid out, no doubt, some considerable time ago.

5087. Then they expend money on the works and then capitalise it, and turn it into shares, and give it to the shareholders at the old price?—I think you will find Parliament does not allow the same interest upon it; it is a limited interest.

5088. I merely ask for explanation, because I do not quite understand?—I think you will see there is a limited interest fixed upon it, but it is all for the benefit of the public; if 100,000 *l.* out of profits is laid out in works, no interest is charged upon that until you get to Parliament, and get it capitalised, which may be ten years hence; meanwhile, what would have been paid as dividends on that amount is not charged against the public at all; they lose the dividend until they come to Parliament and capitalise it.

5089. But the public never get the gas reduced, because they always endeavour to lay it out in works, or something or other, and then in a little while it becomes capital, and they get 7½ per cent. on it; therefore the public never get any reduction?—They cannot do it now, the quarter session will interpose; as long as they were only paying five per cent. and were authorized to pay 10 per cent., they might lay out the other five per cent. upon their works; but now that they are paying themselves 10 per cent. they cannot lay out half the profit by way of capital; the quarter session will prevent it.

5090. It appears to me that they always find out some way of spending their money, so that they never reduce the price of gas?—It is reduced, Sir, and the gas rental of the companies is reduced 200,000 *l.* a year by the reduction of the 6 *d.*

5091. Which companies have reduced the gas?—All of them.

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5092. When did the rest reduce it?—Last year; some were reduced before last year, others were reduced last year; and I think there are one or two companies, the reduction of which only commenced this year; the average reduction caused by the Act of 1860 is fully 6 *d.* per 1,000 feet, and that is equal to a saving of 200,000 *l.* a year, which the public of the metropolis now gain by the operation of that Gas Act.

5093. Mr. *Morrison.*] We have it in evidence that the immediate effect of the Act of 1860 was to raise the price 6 *d.*?—Upon the Central Company it was; you had that evidence; the Central Company took an Act under the advice of the Corporation of London, and assisted by the Corporation of London, and bound themselves by deed to the Corporation to supply the City of London for ever at 4 *s.*; they got early into trouble—they could not make the gas and pay their dividend; and when the Act of 1860 was passed, it became a serious question whether they should be left under that incapacity to charge more than 4 *s.*, or whether they should be able to charge what the other companies charged; the Committee determined that they would not make an exception of this one company, and that it should be allowed to charge 4 *s.* 6 *d.*; but now they have gone to 4 *s.*; legitimately they have paid 10 per cent., and reduced their price to 4 *s.*

5094. The Imperial Company, in the Bill which has come down from the House of Lords, I think have reduced their price to 4 *s.*, and what has been proposed to this Committee is, that the Company are prepared, instead of the 4 *s.* 6 *d.* which they were charging, practically under the Act of 1860, to charge 4 *s.*, merely with the power to raise upon the clauses under that Act, in case of events occurring which are specified there; but there is a clear gain to the metropolis, which the Honourable Member I am sure will appreciate, of 200,000 *l.* a-year by the operation of this Act; but if the companies are let alone, that will continue year by year.

5095. Mr. Alderman *Lusk.*] But do you not think they could produce a gas even cheaper than they do now?—As a practical man, I say no, because I know it is their interest to reduce it; the cheaper they can make it, the more valuable their stock is; and, as I say, there are 13 companies striving who can produce it cheapest.

5096. Is it a notorious fact, that since the Act of 1860 the shares of the gas companies have gone up immensely?—Certainly, and they ought to do; it is just when a company is paying a full dividend and their prices are good, that then the greatest saving will occur to the public, because they cannot add to the dividend.

5097. Do you think 10 per cent. is a fair price where a man has a monopoly?—It is a fair price where a man has to go into an adventure; if you guarantee me six per cent., I will be very thankful for it; but if I incur any risks, I ought to have the chance of making a larger profit.

5098. But when you know the fact that for many years the gas companies were only paying four and five per cent. for many years, and had it not been for the wise measure of 1860 in confirming the districts which they had assorted among themselves, they would not have been paying 10 per cent. now, and the metropolis would not have had the reduction in price of gas.

5099. Do you know why Parliament insists upon seven per cent. only for new capital?—It insists upon it in the case of a company already established and putting out their capital; there is not the same risk as with a newly-established company. Perhaps the Honourable Member will be surprised when I tell him you can buy gas shares to pay more than seven per cent. now.

5100. Mr. *Morrison.*] When their fresh capital is raised the new capital is always issued to the holders of old shares?—Yes.

5101. That is the general plan pursued in all public companies?—Yes.

5102. Do you not think that if it was to be thrown into the open market better terms could be obtained from the public, the capital would be disposed of to the highest bidder?—I do not think at 7½ per cent. it would be if anything above par.

5103. With regard to the capitalisation of profits, is it not really this; that where profits are capitalised, the gas consumers provide the capital, and the interest on that capital goes to the shareholders of the company?—No, Sir, I failed to make myself understood; if you are paying yourself 10 per cent., which is all you are able to pay, you cannot lay out one shilling as capital; if you are paying

paying five per cent. and choose to lay out the other five in capital, and let it go on from year to year until it becomes 30,000 *l.*, 40,000 *l.*, or 300,000 *l.*, and then get it made into capital, all you have done for the public is this, that you have not asked them for any interest upon that capital thus laid out, until the end of the period, when you come to Parliament to recognise it; so that it is a distinct benefit to the consumer. You might have put it into your pocket as part of your legitimate profit; you do not do it, having laid it out in capital, and having been entitled to put it into your pocket, you are entitled to recognise it as capital. This is done with two limitations; first, you do not get the back interest upon it; next, Lord Redesdale puts upon it a reduced dividend, and I think the Imperial capitalised some 400,000 *l.*, receiving only 4 per cent. for ever upon that amount of capital.

5104. But supposing a company has actually reached the 10 per cent. limit, would not the capitalisation of the profits have the effect that I have stated?—Yes.

5105. Mr. Serjeant *Kinglake.*] Then, as I understand, that cannot be done now; it is only done among the old companies before the recent Act?—It cannot be done by a company that is happy enough to pay 10 per cent.

The *Chairman* said, after the three concessions made by Mr. Hope Scott, the only other point on which it was necessary to take evidence, was the question of the reserve fund; Mr. Baxter had gone into it so largely, that it was scarcely requisite to call any more witnesses.

Mr. *Burke* said, receiving that intimation from the Committee, he should feel it his duty to limit the evidence in accordance with what had fallen from the Committee. On the other hand, if they had not received any such intimation from the Committee that they were satisfied with the evidence under that point, there being a large body of evidence brought forward on the other side, they would have felt it their absolute duty to rebut that evidence.

The *Chairman* asked whether Mr. Burke intended to call further evidence after the intimation of the Committee.

Mr. *Burke* said he could not say that.

The *Chairman* said, if no further evidence was called on behalf of the gas companies, the Committee would be ready to hear Mr. Webster in reply on Friday morning.

[Adjourned till Friday, at Twelve o'clock.

Friday, 11*th May* 1866.

MEMBERS PRESENT:

Sir William Gallwey.	Sir John Ogilvy.
Mr. Hartley.	Mr. Paull.
Mr. Serjeant Kinglake.	Mr. Hastings Russell.
Mr. Alderman Lusk.	Mr. Staniland.
Mr. Morrison.	Sir John Trollope.

SIR JOHN TROLLOPE, IN THE CHAIR.

Mr. *Robert Baxter*, called in; and Examined by Mr. *Denison*.

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5106. Do you hand in a return of the reserved fund formed by the several metropolitan gas companies?—Yes; of such, I think, as have formed a reserved fund.—(*The Return was handed in.*)

Vide Appendix.

5107. I suppose those seven that have not a reserved fund have not got into the condition in which, under the General Act and the Metropolitan Act, they are bound to have a reserved fund?—They have not received surplus profits beyond what will repay the arrears of dividend authorised by the Act of 1860.

5108. Mr. Serjeant *Kinglake*.] Is this the entire reserved fund at the present time?—Yes.

Cross-examined by Mr. *Karslake*.

5109. From what source do you take this information?—From the companies.

5110. Has some accountant made out the return?—I sent to the companies for the returns; I have had the returns furnished from the companies; I have made out this paper from those returns.

5111. The companies have made out the returns themselves, in point of fact?—Certainly.

5112. Up to what date is the return?—Christmas.

5113. Christmas 1865?—1865.

5114. It has been made out by accountants?—Yes, the companies' accountants.

5115. Do you know how these reserved funds are invested, or what has become of them?—Generally speaking they are invested in the Three per Cents.

5116. In what other way?—I have not seen any investment mentioned except the Three per Cents., or Government Securities.

5117. You yourself know nothing about it beyond what the secretary or the accountant has informed you?—I have no doubt they are invested; I can refer to the returns, if it is material to you, in the Government Funds.

5118. You know that these reserve funds are invested?—Yes.

5119. These sums are all that are returned in the shape of reserved fund?—These are all that are invested in the shape of reserved fund.

5120. Whether there are other investments under another name, I suppose you do not know?—There are no other investments in the companies of this character.

5121. Do you know what other investments there are of another character?—I do not think they have any investments whatever.

5122. You

5122. You are unable to speak to that?—I do not believe they have, but I said "of this character," because some companies call these sums "contingency funds" and some "reserved funds." It is the only difference I know.

5123. Is there in the ledger an account called "the reserved fund," do you know?—I do not know it as a fact, but, as a matter of course, I infer that there is such an account.

5124. You infer that there is an account showing these amounts?—Yes; the dividends are added to them every half year as they are paid from the stocks in which they are invested, and they are re-invested according to the directions of the Acts.

5125. I see that the Imperial Gas Company has by far the largest reserved fund, 83,834 *l.*?—It is by far the largest company.

5126. With the largest capital?—Yes.

5127. Do you know what is the per centage upon that capital?—The present capital is 1,300,000 *l.*; it is a little over 6 per cent.

5128. I find from the return that was handed in before, that the City of London Gas Light Company is represented to have had at Christmas 1864 a reserved fund of 5,360 *l.*, and at Christmas 1865, 5,360 *l.* 10 *s.* 3 *d.*, while in this return it is said, "None"?—That was brought to me by the Secretary, and fully explained; they have a balance of upwards of 5,000 *l.*, which they call a reserve, but it is not a reserved fund under the statute; it is merely a balance carried on as a floating balance, or working capital, requisite for carrying on the undertaking; it has never been treated as a reserved fund.

5129. Then, so far as your knowledge goes, that which has been invested is returned as reserved fund, and if it is a floating balance for contingencies you do not call it a reserved fund in that return?—No; I do not believe that any of the companies have a reserved fund for contingencies, except in that one instance of the City of London Gas Light and Coke Company; there they call it a reserved fund; they brought it to me to know what was to be done with it.

5130. Are we to take as accurate that return which has been given in by you this morning, or the return given by the companies themselves, as required by the Act of Parliament?—With regard to the case of the City of London Gas Light and Coke Company, the Secretary brought the account to me, and said, that he had in the return to the Secretary of State returned the 5,000 *l.* as a reserved fund. I asked what it was for; he said, that the company considered it well to keep a balance in hand for calls that might be made upon them in the course of their undertaking. I asked if it was invested, and he said it was not, but that it was a floating balance which they used when necessary, and which they added to when they could add to it. It was clear to me that that was not a reserved fund within the statute, and being so insignificant in amount I thought it not material to inquire further into it.

5131. Suppose one of those companies, instead of having 5,000 *l.* in that way, had 50,000 *l.*, would you say that that was not a reserved fund?—I should not say that that was not a reserved fund. This is the only instance. I believe they have made a candid return to me of what I asked for, namely, "What reserved fund have you formed in your company?" Every company has returned to me the amount which it has under the head of "reserved fund," or in the nature of a reserved fund; the only explanation necessary was the case of the City of London Gas Light Company, to which you have referred.

5132. Then we get it, to a certain extent, secondhand from you; their own return was in the form that we have seen; but since they have consulted you the only return they make for the Committee is that which appears in the ledger account, or elsewhere, as a sum invested under the name and title of a reserved fund?—No, you are exercising your imagination; I have asked for the return as the most convenient mode of acquiring it; I have no doubt that the companies have honestly given me the return; the only question that arose upon the face of the returns was the single question with regard to the City of London Gas Light Company, and when I came to look at that sum, and to ask why it was put by, and what they did with it, and how it was used, I found that it was a mere floating reserve fund under the Act.

5133. Mr. *Paull.*] A kind of surplus account of undivided profits to be carried forward next year?—Just so.

5134. The reserved fund has a permanent character, while what you are now

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speaking of is floating, being merely undivided profits?—I find it to be so in the case of the City Gas Company.

5135. *Chairman.*] How do you account for the fact that other companies do not carry it out in the same manner?—Because those who have returned amounts as reserved funds have put by substantial amounts, which they have invested according to the statute, and treated as the nucleus of reserved funds to be filled up as the profits enabled them to do it; this company has not done so.

5136. The same company appears to have a revenue account as well?—They have always revenue accounts, of course; those are the returns to the Secretary of State, required in the form that the Secretary of State prescribes under the Gas Act of 1860; returns of the revenue, expenditure and profits.

5137. Mr. *Karslake.*] Let me call your attention to the return put in by you of the Commercial Gas Company, showing a reserved fund of 8,137 *l.*?—Yes.

5138. In the statements already put in, and printed in the Appendix, as far as I can see, there is no such reserved fund mentioned at all?—The Secretary of the Commercial Company is in the room, and he will be able to explain it.

5139. With regard to the Equitable Gas Light Company, the return is "none"; is that represented to you as such?—Yes.

5140. In the account handed in we find a balance brought forward which you do not treat as reserved fund, but merely as a balance brought forward?—That is quite another thing.

5141. With regard to the Great Central Gas Consumers' Company, the return is "none"?—Yes.

5142. In the expenditure of that company there is no reserve fund put down, it is true, but there is a "balance to next year's account of 10,000 *l.*"?—Yes.

5143. You say, that although there is that balance carried forward to next year, you do not treat it as reserved fund in any sense?—Every company must or ought to carry over a balance.

5144. The reserved fund of the Imperial Gas Light Company is given as 83,834 *l.*?—Yes.

5145. Where is that in their account?—It is the last item on the right hand side.

5146. In addition to that, there is a balance to next year's account, 65,000 *l.*, besides a balance to next year's contingency fund, 35,000 *l.*, making altogether about 180,000 *l.* carried over in one way or another; let me call your attention to the difference in these accounts?—They do not differ; the sums are identical with those I have put in.

5147. I find there is an item, "Balance to next year's account, reserved fund"?—That is reserved fund, no doubt, but the balance carried over upon the face of all these accounts which I have looked into, vary in every company. Some companies had paid up in full the dividends attributable to the profits brought out here; others had not; one had carried over a smaller balance; others had a larger balance.

5148. Confining ourselves to the Imperial Gas Light Company, I see in the expenditure, "Dividend account for shareholders' profits, 130,000 *l.*"?—Yes.

5149. Then there is "Contingences and reserved funds, 27,770 *l.*"—Yes.

5150. *Chairman.*] It appears that the balances are made up to the 30th of June, and the account is to the end of the year; may not this large balance of 65,000 *l.* be kept in hand towards the payment of dividend?—It is evident upon the face of the account.

5151. Does not that explain the whole matter?—Altogether.

Mr. *Karslake* said it was difficult to appreciate the accounts without the opportunity of investigating them.

5152. *Chairman.*] If you look under the head of dividends, you will find that they are paid to the 30th of June, but the account goes to the 31st December, and it is presumable that another half year's dividend is due, but not paid at that time?—That is just the fact.

5153. Mr. *Karslake.*] Besides the reserved fund of 83,000 *l.*, there is a balance to next year's contingency fund to the amount of nearly 36,000 *l.*; I am referring to the two last items; it is not the question of whether the amount goes over for dividend?—It is necessary for a company dealing in millions of money, and with an outlay of upwards of half a million every year, to have a reserve in hand, what we call a working capital, to meet the demands of the company,

company, and that was represented here by 35,000 *l.*; the moment they know they would not require so large a contingency fund as that, they will invest more in the reserved fund, out of which they never take it except under certain circumstances.

5154. When they have got their full reserve fund, what is to prevent them charging any amount of balance to next year's account on the contingency fund, if they choose?—The process by which they are to apply surplus profits beyond 10 per cent. and beyond the reserve fund, to the reduction of the price of gas, is pointed out in the Gas Works Clauses Act; any two gas consumers may go to the quarter sessions, and the quarter sessions will appoint an accountant; the accountant examines the accounts, ascertains and reports to the court of quarter sessions what are the actual profits and what would be required to pay 10 per cent.; therefore all the surplus there is ought to be applied in the reduction of the price, and the quarter sessions can order the price to be reduced accordingly.

5155. I see, at all events, that the dividends which are paid by the Imperial Gas Light Company are one whole year's dividend—126,000 *l.*?—Certainly, they are paid up to the 30th of June, and they are brought forward on the opposite side; there is a balance of 61,000 *l.* profits on the previous year, so that if you will eliminate the balance brought forward you will find that the dividends amount to 126,750 *l.*, and the profits to 130,000 *l.*; the case is very simple; there is no ambiguity.

5156. With regard to the Independent Gaslight Company, the return of the reserve fund is 18,000 *l.*; that is according to their own return?—Yes.

5157. The London Gaslight Company, "none"?—Yes.

5158. The return of the Phœnix Gaslight Company is the same as that returned by them?—Yes.

5159. The Ratcliffe Gaslight and Coke Company, "none"?—Yes.

5160. The South Metropolitan Gaslight Company, 20,000 *l.*?—The South Metropolitan Gaslight Company have made up their full reserve fund, 20,000 *l.*

5161. The Surrey Gas Consumers' Company, "none"?—Yes.

5162. The Western Gaslight Company, "none"?—Yes.

5163. Mr. *Hartley*] Going back to the first question as to the reserve fund, if I understand it, it would have been more correct to call it working capital?—Yes.

5164. Independently of the reserve fund invested by the gas companies, they, like any other large concern, must have a certain amount of floating capital?—Certainly.

5165. Those are the sums mentioned over and above the reserved fund?—Yes.

5166. Then it is a question for the Committee to consider whether those amounts are excessive, having regard to the amount of the capital?—Just so, if the Committee think it necessary to go into that.

5167. The total capital being 437,000 *l.*, it is for our consideration whether 5,360 *l.* is an excessive amount of working capital?—Just so.

5168. Sir *William Gallwey.*] Do all the gas companies pay their dividends about the same period?—No, they vary considerably; some of them pay more promptly, and some of them pay at later dates.

5169. Would there be any difficulty in amending this return, so as to give opposite these amounts the sums of money they have at their bankers, or have put aside as a contingent fund for meeting extraordinary expenses?—None whatever, if it is desired; if the Honourable Baronet, after looking over the other paper that has been put in, will specify what he desires to have, we will furnish it immediately.

5170. Mr. Alderman *Lusk.*] Who is it that controls the expenditure in any way of these companies?—The Board, of course.

5171. The companies themselves?—Certainly.

5172. Who decides what shall be carried to the reserved fund, and what shall be carried forward?—The Board.

5173. Who determines the amount that is to be carried forward or given to dividends?—Again I may say, the Board.

5174. Then, I may say, the whole management of these companies is in the hands of the Board?—Entirely.

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5175. And the whole manipulation of the accounts?—Entirely.

5176. And they have the exclusive privilege given to them by Act of Parliament?—No, they are subject to control in this way; first they must return their accounts in whatever form the Secretary of State may please to specify; the form in which they are returned to Parliament has been already specified by the Secretary of State, but if he desires another form he can issue his mandate, and the Boards must obey it; and again, whenever any two consumers desire to have the accounts looked into, they may go to the quarter sessions, who will appoint an accountant to report upon the matter.

5177. Do the shareholders meet and appoint auditors to audit the accounts? —Yes.

5178. Who determines or decides what shall be appropriated to the reserved fund?—The Board, practically; the shareholders might at their general meeting express an opinion upon the subject, and if the opinion is a sound one, that is, if it is not an illegal opinion, the Board will be bound to act upon it.

5179. Unless you have some controlling power you never need have a reserved fund; you can always carry it forward, and appropriate it in some way or other? —If the companies were enabled to divide any amount of dividend, that would be so; but they are confined to 10 per cent.

5180. But you say there is nobody to control the expense, or to control the new works, except themselves; that there is nobody to decide on what shall be carried forward except themselves; and nobody to decide as to the reserve fund except themselves; then they do not need a reserve fund?—No one is more competent than the Honourable Member himself to understand that when men of business are set down to their business, they desire to make such profit out of it as they can; their simple aim is to make the largest possible profit out of the transactions in which they are engaged, consistently with their obligations to the public; having done so, the Secretary of State asks, "What have you done?" and then the court of quarter sessions comes in and says, "You have made more profit than you have a right to divide, or more than you require to constitute a reserve fund; we will take the law into our hands, and command you to reduce the price;" that is the practical control, very simple and very practical.

5181. But when men meet together, as I do with some others, to make as much profit as we can, we generally look to ourselves; we do not look much to anybody else?—I hope the Honourable Member will give credit to the companies, for the same upright intention in all their dealings that I know he himself possesses: then I am sure there will be no difficulty in carrying on business properly.

Mr. *Karslake* was heard to address the Committee in reply, on behalf of the Corporation of London.

[Adjourned to Monday, at Twelve o'clock.

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QUARTERS ENDING	GREAT CENTRAL COMPANY.					CHARTERED COMPANY.					CITY OF LONDON COMPANY.				
	Grains of Sulphur in 100 feet.			No. of Experiments.		Grains of Sulphur in 100 Feet.			No. of Experiments.		Grains of Sulphur in 100 feet.			No. of Experiments.	
	Maximum.	Minimum.	Average.	TOTAL.	When over 20.	Maximum.	Minimum.	Average.	TOTAL.	When over 20.	Maximum.	Minimum.	Average.	TOTAL.	When over 20.
May - - 1861 - -	23·1	20·8	22·1	4	4	37·4	14·1	23·1	7	5	–	–	–	–	–
August - „ - -	25·0	12·0	20·7	5	3	23·5	16·2	19·6	5	2	–	–	–	–	–
November - „ - -	25·1	8·6	20·3	7	5	24·9	16·1	20·0	9	5	–	–	–	–	–
February - 1862 - -	25·9	14·5	20·6	8	6	22·3	14·1	18·2	2	1	–	–	–	–	–
May - - „ - -	20·8	19·6	20·3	5	3	27·3	17·1	20·6	4	2	–	–	–	–	–
August - „ - -	25·0	11·8	17·8	4	1	–	–	–	–	–	–	–	–	–	–
November - „ - -	23·8	9·0	19·9	9	6	25·9	8·8	18·3	7	5	–	–	–	–	–
February - 1863 - -	25·9	16·5	21·7	8	5	–	–	–	–	–	–	–	–	–	–
May - - „ - -	26·8	20·3	22·7	7	7	34·0	20·1	24·3	7	7	–	–	–	–	–
August - „ - -	26·0	12·3	21·9	25	19	25·6	19·6	22·9	22	21	–	–	–	–	–
November - „ - -	27·1	15·2	20·5	81	42	29·7	13·8	20·2	81	37	40·9	11·5	20·5	81	38
February - 1864 - -	27·6	16·0	20·5	77	41	33·9	17·2	22·8	77	64	49·7	16·0	22·0	77	57
May - - „ - -	29·0	18·0	22·1	76	65	33·7	17·3	22·6	76	61	26·0	17·0	21·0	76	56
August - „ - -	35·0	18·4	22·4	76	70	27·5	14·4	19·1	76	42	29·7	15·0	19·6	76	31
November - „ - -	32·2	17·3	22·0	65	48	22·9	15·3	18·7	65	17	22·0	15·0	18·3	65	4
February - 1865 - -	25·4	16·6	21·2	63	43	23·4	17·0	19·8	63	19	21·0	14·5	18·7	63	2
May - - „ - -	28·0	19·5	23·7	55	51	24·6	13·0	19·0	59	12	22·5	14·2	17·5	59	7
August - „ - -	32·1	21·8	25·8	51	51	26·3	14·6	19·6	51	21	25·0	15·5	18·7	51	10
November - „ - -	30·3	19·2	22·6	55	52	28·4	15·7	21·5	55	34	25·1	16·4	19·5	55	19
February - 1866 - -	32·9	14·4	24·3	59	58	30·7	20·8	24·7	59	59	28·2	18·0	22·7	55	51
To April - „ - -	26·6	16·4	21·9	39	32	27·8	19·7	23·6	39	37	24·4	18·9	21·0	39	27
				779	612				764	451				697	302

So that since the year 1860 the maximum amount of Sulphur in the Great Central Gas has been - - - 35· grains in 100 cubic.
The Chartered Gas - - - - - - 33·9 „ „
The City Gas - - - - - - - 49·7 „ „

And of all the examinations of the Great Central Gas there have been 78·5 per cent. above the maximum of the Act of Parliament, of the Chartered 59 per cent., and of the City Companies 13·3 per cent., making a total of 61 per cent of all the testing, when the sulphur in the Gas supplied to the City was in excess of the quantity sanctioned by Parliament.

H. Lethel.

Appendix, No. 2.

PAPERS handed in by Dr. *Letheby*, 27 April 1866.

App. No 2.

MEMORANDA by Dr. *Letheby*, of the Amendments required for the more satisfactory working of the METROPOLIS GAS ACT of 1860.

1. An improvement of the illuminating power of the Gas.

2. An improvement of the chemical quality of the Gas.

3. A definition of the place where the testings of the gas shall be made, as:—

(*a*) That it shall be at a distance of not less than a thousand yards from the works.

(*b*) That it shall be chosen by the local authority, and if the situation is objected to by the Gas Company supplying that district, the place shall be fixed by a magistrate, or if in the City, by one of the justices.

(*c*) That there shall be only one place for testing the Gas in each district supplied by each of the works of the Gas Companies.

4. That the methods of testing the Gas for illuminating power and chemical quality shall be clearly and precisely described in every particular, as:—

(*a*) With regard to the testing of the illuminating power of the Gas—

The burner shall be precisely described in all its parts and measurements.

The working standard of light shall be defined; and if it be the flame of a carcel lamp, the particulars and measurements of it, and of the lamp, and of its rate of burning should be precisely defined.

The *actual process* to be followed in making the experiment should be described.

The time for making the experiment should be fixed, as from 5 to 10 p.m. in winter, and 8 to 11 p.m. in summer.

(*b*) With respect to the tests of purity—

The exact means of ascertaining the presence of *ammonia* should be described.

The exact means of ascertaining the presence of *sulphuretted hydrogen* should be described.

The exact process for ascertaining the amount of sulphur, in any form, in the Gas, should be described, as it is in the Birmingham and Staffordshire Gas Act of 1864.

The period of the day and night when the experiments for estimating the purity of the Gas should be fixed, as from 9 in the morning to 9 in the morning of the following day.

5. Provision should be made for ascertaining and recording the pressure of the Gas at each of the testing places during the whole period of from 9 in the morning of one day to 9 in the morning of the next.

6. The cost of maintaining the testing-places and providing the necessary apparatus should be paid by the Companies of the respective districts in which the testing-place is.

7. The appointment of the officers to test the Gas should rest with the local authority, and the local authority should be empowered to pay the salaries of the officers out of some specified local fund.

8. There should be a chief Gas analyst, who should direct the operations of the assistant Gas analysts, and he should receive daily the returns of the examinations of the assistant analysts, and submit them and report on them weekly to the local authority.

9. The local authority should be the Metropolitan Board of Works outside the City, and the Commissioners of Sewers inside the boundaries of the City.

10. The Gas Companies should be allowed to send an officer to each of the testing-places to witness the testings, but he should not be allowed to interfere with the operations; but he should be allowed to report to his Board.

11. The local authority should have a speedy and certain means of proceeding before a justice or magistrate, and for enforcing penalties in case of any defect of the quality or illuminating power of the Gas.

App. No. 2.

TABLE of the Proportions of Sulphur in the Gas of the following Towns of England.

TOWN.	Illuminating Power of Gas.	Grains of Sulphur per 1,000 Feet.
Ely	11·59	6·96
Chatham	8·46	18·20
Oxford	19·33	7·45
Newcastle-on-Tyne	14·41	4·93
Birmingham	13·00 to 15·94	14·15 to 15·90
Nottingham	16· to 17·	8·9 to 13·4
Derby	15·89	17·81
Burton-on-Trent	15·	20·55
Hanley (Staffordshire)	15·66	14·39
Dublin	14·33	17·92
Littleborough	23·00	8·46
Manchester	24·5	10·94
Hastings	14· to 15·	11·67 to 17·48
Exeter	14·67	3·59
Bath	14·81	12·80
Liverpool	24·41	14·54
Pusey	16·49	3·30
Crystal Palace	15· to 16·	13·70 to 16·92
Chester	18·0	11·87
Uxbridge	12·48	13·7
Brighton and Hove	13·13	22·26
Rochester and Chatham	12·74	14·23
Making an average of		13·16

COMPARATIVE ILLUMINATING POWER of the Chartered and Great Central Gas, before the passing of the Metropolis Gas Act of 1860, and since estimated in Standard Sperm Candles of 120 grains.

YEARS ending in February.	Chartered Gas.		Great Central Gas.	
	Old Burner (0·57 inch).	New Burner (0·44 inch).	Old Burner (0·57 inch).	New Burner (0·44 inch).
1853	12·68	13·18	13·99	15·65
1854	12·67	14·14	13·13	14·69
1855	12·72	14·23	13·28	14·85
1856	12·48	13·95	13·34	14·92
1857	11·91	13·33	13·31	14·89
1858	11·19	12·52	12·91	14·44
1859	,,	,,	12·94	14·47
1860	,,	,,	12·87	14·39
1861	,,	,,	11·73	13·12
1862	12·12	13·56	11·84	13·25
1863	13·16	14·72	12·91	14·44
1864	12·88	14·41	13·74	15·37
1865	11·88	13·27	12·09	13·50
Five years (from 1852)	12·49	13·97	13·41	15·00
Ten years (from 1852)	12·25	13·70	12·93	14·47
Three years (since 1862)	12·64	14·30	12·91	14·44

App. No. 2.

The results of 2,612 examinations made in the year which ended February 1866, of the Gas with the new burner adopted by the Companies, are as follows: —

	QUARTER ending in	Illuminating Power in Standard Sperm Candles.			
		Number of Examinations.	Maximum.	Minimum.	Average.
City Company	May	217	16·31	12·3	14·26
	August	219	16·98	12·86	14·19
	November	218	14·82	12·35	13·60
	February	216	14·34	11·07	12·64
	YEAR	870	16·98	11·07	13·67
Chartered Company	May	217	15·82	12·42	14·31
	August	219	15·50	12·98	14·33
	November	218	14·80	12·08	13·59
	February	216	14·49	10·80	13·05
	YEAR	870	15·82	10·80	13·82
Great Central Company	May	218	16·33	11·60	14·19
	August	218	16·50	12·52	14·23
	November	218	14·58	12·02	13·62
	February	218	15·25	11·82	13·28
	YEAR	872	16·50	11·60	13·83

TABLE showing the Quality of the Great Central Gas from the Year 1852.

Years ending in February.	Illuminating Power in Sperm Candles.		
	As estimated by the Old Burner (0·57 inch).	As estimated by the New Burner (0·44 inch).	
1853	13·99	15·65	Average of eight Years before Metropolis Gas Act, 14·79.
1854	13·13	14·69	
1855	13·28	14·85	
1856	13·34	14·92	
1857	13·31	14·89	
1858	12·91	14·44	
1859	12·94	14·47	
1860	12·87	14·39	
1861	11·73	13·12	Average of Six Years since Metropolis Gas Act, 13·63.
1862	11·84	13·25	
1863	12·91	14·44	
1864	12·59	13·74	
1865	12·29	13·42	
1866	12·67	13·83	

AMOUNT of Sulphur in the Gas supplied to the City by the City of London, the Chartered, and the Great Central, Companies. App. No. 2.

	QUARTERS ending in	Amount of Sulphur in the Gas supplied to the City.				
		Number of Experiments.		Grains of Sulphur per 100 Cubic Feet.		
		Total.	In Excess.	Max.	Min.	Average.
City of London	May	59	7	22·5	14·2	17·5
	August	51	10	25·0	15·5	18·7
	November	55	19	25·1	16·4	19·5
	February	55	51	28·2	18·0	22·7
	Year	220	87	28·2	14·2	19·6
Chartered	May	59	12	24·6	13·0	19·0
	August	51	21	26·3	14·6	19·6
	November	55	34	28·4	15·7	21·5
	February	59	59	30·7	20·8	24·7
	Year	224	126	30·7	13·0	21·2
Great Central	May	55	51	28·0	19·5	23·7
	August	51	51	32·1	21·8	25·8
	November	55	52	30·3	19·2	22·7
	February	59	58	32·9	14·4	24·3
	Year	220	212	32·9	14·4	24·1

Appendix, No. 3.

App. No. 3.

PAPER handed in by Dr. *Aldis*, 27 April 1866.

RESULTS of EXPERIMENTS made by Dr. *Aldis* with No. 1 (Birmingham) Burner, No. 2 (Suggs's) Burner, and No. 3 (the Old Iron) Burner.

13·27			
12·87			
26·14			
13·07	- -	average on No. 1 burner.	
14·12			
14·31			
28·43			
14·21	- -	average on No. 2 burner.	
12·36			
12·37			
24·73			
12·36	- -	average on No. 3 burner.	

No. 1 - -	13·07		
No. 3 - -	12·36		
	·71	- -	candles.
No. 2 - -	14·21		
No. 3 - -	12·36		
	1·85	- -	candles.
No. 1 - -	13·07		
No. 2 - -	14·21		
	1·14	- -	candles.

Appendix, No. 4.

PAPERS put in by Mr. *Heywood*, 30 April 1866.

ABSTRACT showing the Total Number of DEFECTIVE LIGHTS in the City of *London*, reported by the Police during the Years 1861, 1862, 1863, 1864, and 1865.

	Number of Defective Lights in the Years				
	1861.	1862.	1863.	1864.	1865.
NORTH DISTRICT. (Chartered Gas Company.)					
Feeble lights	12	4	5	20	225
Lights went out	16	36	42	64	98
Not lighted during the night	5	11	58	75	140
TOTAL in North District	33	51	105	159	493
SOUTH DISTRICT. (Great Central Gas Company.)					
Feeble lights	11	31	12	15	351
Lights went out	223	468	260	604	180
Not lighted during the night	67	145	549	1,079	817
TOTAL in South District	301	644	821	1,698	1,348
TOTAL number of Defective Lights in the whole of the City	334	695	926	1,857	1,841

TABLE showing the RATE of CONSUMPTION in 1862 at certain PUBLIC LAMPS in the City of *London*, not having Meters affixed to them.

GREAT CENTRAL GAS COMPANY.

NAME OF STREET.	No. of Lights at which Observations were made.	Contract Quantity per Lamp per Hour.	Quantity consumed per Hour.
		Cubic feet.	*Cubic feet.*
Farringdon-street	5	3	2·88
Fleet-street	25	3	2·55
Skinner-street	10	3	2·86
Snow-hill	4	3	2·61
Well-court	2	3	2·94
Bucklersbury	2	3	2·26
Upper Thames-street (from Queen-street to Addle-hill).	19	3	2·63
The average being			2·64

CHARTERED GAS COMPANY.

NAME OF STREET.	No. of Lights at which Observations were made.	Contract Quantity per Lamp per Hour.	Quantity consumed per Hour.
		Cubic feet.	*Cubic feet.*
Aldersgate-street	4	5	2·94
Bishopsgate-street	8	5	3·41
New Broad-street	1	5	3·09
Liverpool-street	1	5	3·00
Little Moorfields	6	5	3·00
Princes-street	4	5	3·93
Cornhill	5	5	3·76
Leadenhall-street	8	5	4·00
Moorgate-street	14	5	4·15
The average being			3·76

Appendix, No. 5.

PAPER handed in by Mr. *Samuel Wilkinson*, 1 May 1866.

DOCUMENT showing the FINANCIAL position of the WALSALL GAS COMPANY, and also the Average Daily Consumption of Gas in June and December, from the Year 1859 to 1865.

WALSALL.

THE Improvement Commissioners found that their operations were successful.

The following account shows their financial position year by year, from 1858.

Year.	Amount of Capital Account. £.	s.	d.
1859	18,578	3	1
1860	20,495	9	–
1861	21,934	9	11
1862	23,146	4	–
1863	25,102	17	9
1864	28,920	7	2
1865	32,852	9	7

The total sums which had been paid out of revenue to the capital account at each of these years, being the profit made, are as follows:—

	£.	s.	d.
1859 } 1860 }	5,350	–	–
1861	6,850	–	–
1862	8,350	–	–
1863	13,350	–	–
1864	16,850	–	–
1865	19,350	–	–

	£.	s.	d.
At this date the total amount of capital expended in the works, plant, mains, &c., amounted to	32,852	9	7
The amount due on loans in respect thereof was	13,450	–	–
	19,402	9	7
Showing amount paid off out of profits to be reducible by the difference between amount owing for goods and amount of cash in Treasurer's hands	52	9	7
Making Net amount paid off out of profits £.	19,350	–	–

The average of the quantity of Gas supplied daily by the Commissioners is as follows, taking the daily average of June, and that of December, for the minimum and maximum quantities per day.

YEAR.	Daily Average in June.	Daily Average in December.
1857	34,000	140,000
1858	45,000	164,000
1859	60,000	210,000
1860	65,000	230,000
1861	66,000	240,000
1862	69,000	250,000
1863	72,000	272,000
1864	80,000	330,000
1865	95,000	350,000

Appendix, No. 6.

PAPER handed in by Mr. *Samuel Hughes*, 3 May 1866.

ABSOLUTE PROFIT of Gas Companies supplying the Metropolis.

Compiled from the Accounts Printed by Order of Parliament.

	Share Capital on which Dividend is paid.	Profit as per Account.	Additional Items constituting Profit.		Total Profit.	Per Centage on Share Capital.
			Meters.	Reserve Fund.		
	£.	£.	£.	£.	£.	£.
Chartered:						
1861	689,730	50,187	768	645	51,600	7·48
1862	720,000	71,613	561	193	72,367	10·05
1863	720,000	78,661	640	45	79,346	11·02
1864	780,000	86,186	981	707	87,874	11·27
£.	2,909,730	Average 10·01 per Cent.			291,187	
City of London:						
1861	364,000	16,576	nil	nil	16,576	4·55
1862	364,000	28,416	„	„	28,416	7·81
1863	380,000	28,221	„	„	28,221	7·43
1864	380,000	35,791	„	„	35,791	9·42
£.	1,488,000	Average 7·33 per Cent.			109,004	
Commercial:						
1861	274,750	27,897	1,245	nil	29,142	10·61
1862	305,135	36,408	nil	„	36,408	11·93
1863	331,650	45,153	„	„	45,153	13·61
1864	360,360	47,779	„	„	47,779	13·26
£.	1,271,895	Average 12·46 per Cent.			158,482	
Equitable:						
1861	217,815	30,320	nil	nil	30,320	13·92
1862	240,000	32,947	„	„	32,947	13·73
1863	268,000	35,016	„	„	35,016	13·07
1864	268,000	35,419	„	„	35,459	13·23
£.	993,815	Average 13·46 per Cent.			133,742	
Great Central:						
1861	172,160	4,218	nil	10,704	14,922	8·67
1862	185,400	14,972	„	8,551	23,523	12·69
1863	181,227	15,909	„	6,073	21,982	12·13
1864	185,400	26,516	„	627	27,143	14·60
£.	724,187	Average 12·09 per Cent.			87,570	
Imperial:						
1861	1,007,435	99,477	nil	3,520	102,997	10·22
1862	1,137,500	114,976	„	3,577	118,553	10·42
1863	1,170,000	128,347	„	22,297	150,644	12·88
1864	1,170,000	120,250	„	42,567	162,817	13·92
£.	4,484,935	Average 11·93 per Cent.			535,011	

* Wood-street Fire and Payment, *re* Croll not included.

ABSOLUTE PROFIT of Gas Companies supplying the Metropolis—*continued.*

	Share Capital on which Dividend is Paid.	Profit as per Account.	Additional Items constituting Profits.		TOTAL PROFIT.	Per Centage on Share Capital.
			Meters.	Reserve Fund.		
INDEPENDENT:	£.	£.	£.	£.	£.	£.
1861	120,000	14,702	nil	nil	14,702	12·25
1862	120,000	17,049	„	„	17,049	14.21
1863	120,000	25,988	„	9,000	34,988	29·16
1864	120,000	15,686	„	7,152	22,838	19·03
£.	480,000	Average 18·66 per Cent.			89,577	
LONDON:						
1861	547,427*	33,157	70	nil	33,227	6·07
1862	548,843	45,308	1,242	187	46,737	8·52
1863	548,053	33,208	1,792	1,281	36,281	6·44
1864	547,696	43,616	1,500	337	45,453	8·30
£.	2,192,019	Average 7·38 per Cent.			161,698	
PHŒNIX:						
1861	495,000	49,909	nil	nil	49,909	10·08
1862	508,500	55,495	„	„	55,495	10·91
1863	531,000	61,718	„	„	61,718	11·62
1864	720,000	72,127	„	„	72,127	10·02
£.	2,254,500	Average 10·61 per Cent.			239,249	
RATCLIFF:						
1861	90,000	6,256	3	nil	6,259	6·95
1862	90,000	11,252	4	„	11,256	12·51
1863	90,000	10,491	nil	„	10,491	11·66
1864	90,000	10,620	„	„	10,620	11·80
£.	360,000	Average 10·73 per Cent.			38,626	
SOUTH METROPOLITAN:						
1861	152,000	3,109	958	18,499	22,566	14·85
1862	160,000	17,970	605	nil	18,575	11·61
1863	191,025	2,029	478	20,000	22,507	11·78
1864	199,150	23,180	990	nil.	24,170	12·14
£.	702,175	Average 12·51 per Cent.			87,818	
SURREY CONSUMERS:						
1861	149,994	13,294	58	nil	13,352	8·90
1862	150,000	17,425	94	„	17,519	11·68
1863	150,000	18,440	nil	„	18,440	12·29
1864	169,992	21,595	68	„	21,663	12·74
£.	619,986	Average 11·45 per Cent.			70,974	
WESTERN:						
1861	210,000	18,631	nil	nil	18,631	8·87
1862	225,000	25,656	„	„	25,656	11·40
1863	230,000	25,515	„	12	25,527	11·10
1864	250,000	34,341	„	„	34,341	13·73
£.	915,000	Average 11·38 per Cent.			104,155	

* The Capital in this column is greater than that on which Dividend is paid, but the excess cannot be ascertained from the accounts.

Appendix, No. 7.

£ s
17 PAPER handed in by Mr. *Heron*, 4 May 1866.

RECEIPTS and EXPENDITURE of the MANCHESTER CORPORATION GAS WORKS.

RECEIPTS.

YEAR.	Gas Rents.	Coke, Tar, &c.	TOTAL.
	£. s. d.	£. s. d.	£. s. d.
24 June 1860 - - - -	154,658 4 2	14,677 8 9	169,335 12 11
„ 1861 - - - -	152,323 19 3	19,096 6 4	171,420 5 7
„ 1862 - - - -	143,310 9 6	18,106 – 11	161,416 10 5
„ 1863 - - - -	147,422 – 5	25,911 3 10	173,333 4 3
„ 1864 - - - -	157,130 2 10	26,674 9 7	183,804 12 5
„ 1865 - - - -	159,698 1 9	29,106 8 11	188,804 10 8

EXPENDITURE.

YEAR.	Cannel.	Wages, &c.	Depreciation of Works.	Interest, &c.	Liquidation of Mortgage Debt.	Surplus Paid over.	TOTAL.	Gas made.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d	£. s. d.	£. s. d.	*Cubic feet.*
24 June 1860 -	56,177 19 11	43,377 18 2	5,000 – –	16,255 12 4	13,306 5 6	35,217 17 –	169,335 12 11	779,180,000
„ 1861 -	61,320 17 11	46,902 2 7	11,372 5 –	16,098 5 3	18,980 3 –	16,746 11 10	171,420 5 7	814,364,000
„ 1862 -	61,017 17 4	45,552 1 1	12,179 4 11	15,482 3 2	19,330 14 4	7,854 9 7	161,416 10 5	798,901,000
„ 1863 -	60,514 9 4	44,347 3 3	12,666 18 11	14,932 17 8	18,609 17 4	22,261 17 9	173,333 4 3	848,749,000
„ 1864 -	65,944 11 –	45,623 9 11	12,690 12 9	13,888 12 10	17,810 1 –	27,847 4 11	183,804 12 5	971,865,000
„ 1865 -	71,065 8 7	48,256 11 2	13,050 6 6	13,086 10 9	17,587 – 11	25,758 12 9	188,804 10 8	1,069,606,000

App. No. 8.

Appendix, No. 8.

PAPERS handed in by Mr. *Hughes*, 4 May 1866.

1864.—CAPITAL, RECEIPT, and EXPENDITURE, of each Company Supplying

CHARTERED GAS COMPANY, 1864.

TABLE showing RECEIPTS per Ton of Coal.

Price of Coal per Ton, 17 *s.* 3 *d.*, from Mr. MOOR's Return for 1863.—145,148 Tons of Coal used in 1864.

RECEIPT:	£.	*s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Sale of gas (less bad debts)	228,417	31·47	40·911	47·205
Public lighting	19,846*	2·73	3·549	4·095
Rental of meters	4,549	·63	·819	·945
Sale of old materials	1,661	·23	·299	·345
Sale of residual products	48,888	6·74	8·762	10·110
Miscellaneous receipts	4,214	·58	·754	·870
TOTAL Receipts	307,575	42·38	55·094	63·570

CITY OF LONDON GAS COMPANY, 1864.

Price of Coal per Ton, 14 *s.* 11 ¾ *d.*—58,473 Tons of Coal used in 1864.

RECEIPT:	£.	*s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Sale of gas (less bad bebts)	96,997	33·18	43·134	49·770
Public lighting	4,489	1·53	1·989	2·295
Rental of meters	—	—	—	—
Sale of old materials	925	·32	·416	·480
Sale of residual products	21,271	7·27	9·451	10·905
Miscellaneous receipts	7	·00	·000	·000
TOTAL Receipts	123,689	42·30	54·990	63·450

* After deducting 4,365 *l.* 4 *s.* 10 *d.*, the cost of repairing and lighting public lamps.

App. No. 8.

Appendix, No. 8.

PAPERS handed in by Mr. *Hughes*, 4 May 1866.

Gas to the Metroplis, compiled from the Accounts printed by Parliament.

CHARTERED GAS COMPANY, 1864.

TABLE showing WORKING EXPENSES per Ton of Coal.

Price of Coal per Ton, 17 *s.* 3 *d.*, from Mr. MOOR'S Return for 1863.—145,148 Tons of Coal used in 1864.

EXPENDITURE:	£.	Per Ton of Coal. *s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Directors' allowances	2,387	·33	·429	·495
Salaries	7,250	1·	1·300	1·500
Collectors' commission	3,444	·47	·611	·705
Rents, rates, and taxes	8,554	1·18	1·534	1·770
Stationery, printing, &c.	3,588	·49	·637	·735
Payment to auditors	131	·02	·026	·030
Coals, including dues, &c.	125,190	17·25	22·425	25·875
Purifying materials	3,199	·44	·572	·660
Supervision and labour	29,649	4·09	5·317	6·135
Retorts, tools, ordinary repairs, &c.	23,757	3·27	4·251	4·905
Ordinary repair, &c.	6,152	·85	1·105	1·275
Restoring and replacing	5,848	·80	1·040	1·200
Additional	981	·13	·169	·195
Law charges, &c.	552	·08	·104	·120
Reserve fund, &c.	707	·10	·130	·150
Balance, being shareholders' profit	86,186	11·88	15·444	17·820
TOTAL Expenditure	307,575	42·38	55·094	63·570

CITY OF LONDON GAS COMPANY, 1864.

Price of Coal per Ton, 14 *s.* 11 ¾ *d.*—58,473 Tons of Coal used in 1864.

EXPENDITURE:	£.	Per Ton of Coal. *s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Directors' allowances	1,425	·49	·637	·735
Salaries	1,473	·50	·650	·750
Collectors' commission	743	·25	·325	·375
Rents, rates, and taxes	2,011	·69	·897	1·035
Stationery, printing, &c.	970	·33	·429	·495
Payment to auditors	109	·04	·052	·060
Coals, including dues, &c.	43,796	14·98	19·474	22·470
Purifying materials	648	·22	·286	·330
Supervision and labour	15,571	5·33	6·929	7·995
Retorts, tools, ordinary repair, &c.	6,772	2·32	3·016	3·480
Ordinary repair, &c	7,845	2·68	3·484	4·020
Restoring and replacing	2,520	86	1·118	1·290
Additional	—	—	—	—
Law charges, &c.	1,156	·39	·507	·585
Reserve fund, &c.	—	—	—	—
Interest	2,859	·98	1·274	1·470
Bad debts	—	—	—	—
Redemption fund	—	—	—	—
Balance	35,791	12·24	15·912	18·360
TOTAL Expenditure	123,689	42·30	54·990	63·450

Assume 9,230 feet of gas, made per ton of coal.
Assume 8,000 feet of gas, sold per ton of coal.

To find price per 1,000 feet made × 12, and divide by 9·23 or $\frac{12}{9\frac{1}{2}\frac{8}{3}}$ = 1·3.
To find price per 1,000 feet sold × 12 ÷ 8 or multiply by 1·5.

App. No. 8.

COMMERCIAL GAS COMPANY, 1864. - - - -

Price of Coal per Ton, 15 *s.* 11 *d.*—69,717 Tons of Coal used in 1864.

			Per 1,000 Feet.	
			Made.	Sold.
Receipt:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas (less bad debts) - - - -	106,544	30·57	39·741	45·855
Public lighting - - - - - -	14,187	4·07	5·291	6·105
Rental of meters - - - - - -	—	—	—	—
Sale of old materials - - - - -	—	—	—	—
Sale of residual products - - - -	23,679	6·79	8·827	10·185
Miscellaneous receipts - - - - -	1,270	·36	·468	·540
Total Receipts - - -	145,680	41·79	54·327	62·685

EQUITABLE GAS COMPANY, 1864. - - - -

Price of Coal per Ton, 15 *s.* 7¾ *d.*—38,906 Tons of Coal used in 1864.

			Per 1,000 Feet.	
			Made.	Sold.
Receipt:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas (less bad debts) - - -	66,239	34·05	44·265	51·075
Public lighting - - - - - -	6,535	3·36	4·368	5·040
Rental of meters - - - - - -	1,550	·80	1·040	1·200
Sale of old materials - - - - -	135	·07	·091	·105
Sale of residual products - - - -	14,290	7·34	9·542	11·010
Miscellaneous receipts - - - - -	395	·20	·260	·300
Total Receipts - - -	89,144	45·82	59·566	68·730

App. No. 8.

COMMERCIAL GAS COMPANY, 1864.

Price of Coal per Ton, 15 *s.* 11 *d.*—69,717 Tons of Coal used in 1864.

Expenditure:	£.	Per Ton of Coal. *s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Directors' allowances	1,500	·43	·559	·645
Salaries	2,197	·63	·819	·945
Collectors' commission	1,350	·39	·507	·585
Rents, rates, and taxes	3,307	·95	1·235	1·425
Stationery, printing, &c.	2,169	·62	·806	·930
Payment to auditors	150	·04	·052	·060
Coals, including dues, &c.	55,488	15·92	20·696	23·880
Purifying materials	2,779	·80	1·040	1·200
Supervision and labour	17,157	4·92	6·396	7·380
Retorts, tools, ordinary repair, &c.	5,361	1·54	2·002	2·310
Ordinary repair, &c.	4,869	1·40	1·820	2·100
Restoring and replacing	758	·22	·286	·330
Additional	—	—	—	—
Law charges, &c.	466	·13	·169	·195
Reserve fund	—	—	—	—
Interest	349	·10	·130	·150
Bad debts	—	—	—	—
Redemption fund	—	—	—	—
Balance	47,779	13·70	17·810	20·550
Total Expenditure	145,680	41·79	54·327	62·685

EQUITABLE GAS COMPANY, 1864.

Price of Coal per Ton, 14 *s.* 8 *d.*, 35 *s.* 5 *d.*; average Price, 15 *s.* 7¾ *d.*—38,906 Tons of Coal used in 1864.

Expenditure:	£.	Per Ton of Coal. *s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Directors' allowances	1,300	·67	·871	1·005
Salaries	1,755	·90	1·170	1·350
Collectors' commission	923	·47	·611	·705
Rents, rates, and taxes	1,386	·71	·923	1·065
Stationery, printing, &c.	661	·34	·442	·510
Payment to auditors	90	·05	·065	·075
Coals, including dues, &c.	30,438	15·64	20·332	23·460
Purifying materials	986	·51	·663	·765
Supervision and labour	6,385	3·28	4·264	4·920
Retorts, tools, ordinary repair, &c.	4,963	2·55	3·315	3·825
Ordinary repair, &c.	3,345	1·72	2·236	2·580
Restoring and replacing	764	·39	·507	·585
Additional	—	—	—	—
Law charges, &c.	131	·07	·091	·105
Reserve fund	—	—	—	—
Interest	558	·29	·377	·435
Bad debts	—	—	—	—
Redemption fund	—	—	—	—
Balance	35,459	18·23	23·699	27·345
Total Expenditure	89,144	45·82	59·566	68·730

App. No. 8.

GREAT CENTRAL GAS COMPANY, 1864. - - - -

Price of Coal per Ton, 13 *s.* 10½ *d.*—48,531 Tons of Coal used in 1864.

			Per 1,000 Feet.	
			Made.	Sold.
Receipt:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas, less bad debts - - - -	70,139	28·90	37·570	43·350
Public lighting - - - - - -	7,098	2·93	3·809	4·395
Rental of meters - - - - - -	—	—	—	—
Sale of old materials - - - - -	—	—	—	—
Sale of residual products - - - -	23,395	9·64	12·532	14·460
Miscellaneous receipts - - - - -	22	·01	·013	·015
Total Receipts - - -	100,654	41·48	53·924	62·220

IMPERIAL GAS COMPANY, 1864. - - - - -

Price of Coal per Ton, 16 *s.* 4½ *d.*—244,722 Tons of Coal used in 1864.

			Per 1,000 Feet.	
			Made.	Sold.
Receipt:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas, less bad debts - - - -	395,172	32·30	41·990	48·450
Public lighting - - - - - -	66,165	5·41	7·033	8·115
Rental of meters - - - - - -	7,493	·61	·793	·915
Sale of old materials - - - - -	761	·06	·078	·090
Sale of residual products - - - -	88,209	7·20	9·360	10·800
Miscellaneous receipts - - - - -	2,085	·17	·221	·255
Total Receipts - - -	589,885	45·75	59·475	68·625

App. No. 8.

GREAT CENTRAL GAS COMPANY, 1864.

Price of Coal per Ton, 13*s.* 10½*d.*—48,531 Tons of Coal used in 1864.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
EXPENDITURE:	£.	*s.*	*Pence.*	*Pence.*
Directors' allowances	1,500	·62	·806	·930
Salaries	1,374	·57	·741	·855
Collectors' commission	868	·36	·468	·540
Rents, rates, and taxes	1,639	·67	·871	1·005
Stationery, printing, &c.	1,659	·68	·884	1·020
Payment to auditors	67	·03	·039	·045
Coals, including dues, &c.	33,666	13·87	18·031	20·805
Purifying materials	595	·24	·312	·366
Supervision and labour	11,088	4·57	5·941	6·855
Retorts, tools, ordinary repairs, &c.	3,805	1·57	2·041	2·355
Ordinary repair, &c.	6,361	2·62	3·406	3·930
Restoring and repairing	1,042	·43	·559	·645
Additional	—	—	—	—
Law charges, &c.*	6,547	2·70	3·510	4·050
Reserve fund, &c.	627	·26	·338	·390
Interest	3,300	1·36	1·768	2·040
Bad debts	—	—	—	—
Redemption fund	—	—	—	—
Balance	26,516	10·93	14·209	16·395
TOTAL Expenditure	100,654	41·48	53·924	62·220

IMPERIAL GAS COMPANY, 1864.

Price of Coal per Ton, 16*s.* 4½*d.*—244,722 Tons of Coal used in 1864.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
EXPENDITURE:	£.	*s.*	*Pence.*	*Pence.*
Directors' allowances	2,500	·20	·260	·309
Salaries	7,963	·65	·845	·975
Collectors' commission	7,172	·59	·767	·885
Rents, rates, and taxes	7,482	·61	·793	·915
Stationery, printing, &c.	3,775	·31	·403	·465
Payment to auditors	157	·01	·013	·015
Coals, including dues, &c.	200,354	16·37	21·281	24·555
Purifying materials	3,958	·32	·416	·480
Supervision and labour	62,506	5·11	6·643	7·665
Retorts, tools, ordinary repair, &c.	53,082	4·34	5·642	6·510
Ordinary repair, &c.	6,470	·53	·689	·795
Restoring and replacing	2,815	·23	·299	·345
Additional	—	—	—	—
Law charges, &c.	1,847	·15	·195	·225
Reserve fund, &c.	42,567	3·48	4·524	5·220
Interest	33,904	2·77	3·601	4·155
Bad debts	3,083	·25	·325	·375
Redemption fund	—	—	—	—
Balance	120,250	9·83	12·779	14·745
TOTAL Expenditure	559,885	45·75	59·475	68·625

* Including 4,750 *l.*, being fourth instalment on account of Wood-street fire, and 1,035 *l.*, being part of arbitrator's award, *Re* Croll.

App. No. 8.

INDEPENDENT GAS COMPANY, 1864. - - - -

Price of Coal per Ton, 16*s.*—43,029 Tons of Coal used in 1864.

			Per 1,000 Feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas, less bad debts - - - -	59,796	27·79	36·127	41·685
Public lighting - - - - - -	5,850	2·72	3·536	4·080
Rental of meters - - - - - -	1,997	·93	1·209	1·395
Sale of old materials - - - - -	236	·11	·143	·165
Sale of residual products - - - -	16,840	7·83	10·179	11·745
Miscellaneous receipts - - - - -	956	·44	·572	·660
TOTAL Receipts - - -	85,675	39·82	51·766	59·730

LONDON GAS COMPANY, 1864. - - - - -

Price of Coal per Ton, 14*s.* 10¾*d.*—85,488 Tons of Coal used in 1864.

			Per 1,000 Feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas, less bad debts - - - -	132,193	30·93	40·209	46·395
Public lighting - - - - - -	18,811	4·40	5·720	6·600
Rental of meters - - - - - -	2,211	·52	·676	·780
Sale of old materials - - - - -	1,516	·35	·455	·525
Sale of residual products - - - -	35,589	8·33	10·829	12·495
Miscellaneous receipts - - - - -	10	·00	·000	·000
TOTAL Receipts - - -	190,330	44·53	57·889	66·795

- - - - INDEPENDENT GAS COMPANY, 1864.

Price of Coal per Ton, 16 *s.*—43,029 Tons of Coal used in 1864.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
EXPENDITURE:	£.	*s.*	*Pence.*	*Pence.*
Directors' allowances - - - - -	1,200	·56	·728	·840
Salaries - - - - - - - -	1,330	·62	·806	·930
Collectors' commission - - - - -	929	·43	·559	·645
Rents, rates, and taxes - - - - -	1,305	·61	·793	·915
Stationery, printing, &c. - - - -	1,083	·51	·663	·765
Payment to auditors - - - - -	100	·05	·065	·075
Coals, including dues, &c. - - - -	34,423	16·00	20·800	24·000
Purifying materials - - - - -	690	·32	·416	·480
Supervision and labour - - - -	12,465	5·80	7·540	8·700
Retorts, tools, ordinary repair, &c. - -	2,375	1·11	1·443	1·663
Ordinary repair, &c. - - - - -	2,066	·94	1·222	1·410
Restoring and replacing - - - -	1,833	·85	1·105	1·275
Additional - - - - - - - -	—	—	—	—
Law charges, &c. - - - - - - -	782	·36	·468	·540
Reserve fund, &c. - - - - - -	7,152	3·32	4·316	4·980
Interest - - - - - - - -	1,350	·63	·819	·945
Bad debts - - - - - - - -	906	·42	·546	·630
Redemption fund - - - - - - -	—	—	—	—
Balance - - - - - - - -	15,686	7·29	9·477	10·935
TOTAL Expenditure - - -	85,675	39·82	51·766	59·730

- - - - - LONDON GAS COMPANY, 1864.

Price of Coal per Ton, 14 *s.* 5 *d.*, 31 *s.* 5 *d.*; average Price, 14 *s.* 10¾ *d.*—85,488 Tons of Coal used in 1864.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
EXPENDITURE:	£.	*s.*	*Pence.*	*Pence.*
Directors' allowances - - - - -	1,492	·35	·455	·525
Salaries - - - - - - - -	3,467	·81	1·053	1·215
Collectors' commission - - - - -	2,137	·50	·650	·750
Rent, rates, and taxes - - - - -	4,640	1·09	1·417	1·635
Stationery, printing, &c. - - - -	2,124	·49	·637	·735
Payment to auditors - - - - -	100	·02	·026	·030
Coals, including, dues, &c. - - - -	63,700	14·90	19·370	22·350
Purifying materials - - - - -	1,237	·29	·377	·435
Supervision and labour - - - - -	18,829	4·41	5·733	6·615
Retorts, tools, ordinary repairs, &c. - -	29,823	6·98	9·074	10·470
Ordinary repair, &c. - - - - -	8,106	1·90	2·470	2·850
Restoring and replacing - - - -	3,305	·77	1·001	1·155
Additional - - - - - - - -	1,500	·35	·455	·525
Law charges, &c. - - - - - - -	1,091	·26	·338	·390
Reserve fund - - - - - - -	—	—	—	—
Interest - - - - - - - -	4,826	1·13	1·469	1·695
Redemption fund - - - - - - -	337	·08	·104	·120
Balance - - - - - - - -	43,616	10·20	13·260	15·300
TOTAL Expenditure - - -	190,330	44·53	57·889	66·795

App. No. 8.

PHŒNIX GAS COMPANY, 1864. - - - -

Price of Coal per Ton, 15 *s.* 1 *d.*—88,380 Tons of Coal used in 1864.

			Per 1,000 Feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas (less bad debts) - - - -	137,695	31·16	40·508	46·740
Public lighting - - - - - -	19,966	4·52	5·876	6·780
Rental of meters - - - - - -	—	—	—	—
Sale of old materials - - - - -	—	—	—	—
Sale of residual products - - - -	41,861	9·47	12·311	14·205
Miscellaneous receipts - - - - -	872	·20	·260	·300
TOTAL Receipts - - -	200,394	45·35	58·955	68·025

RATCLIFF GAS COMPANY, 1864. - - - -

Price of Coal per Ton, 15 *s.*—19,807 Tons of Coal used in 1864.

			Per 1,000 Feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas (less bad debts) - - - -	26,456	26·72	34·736	40·080
Public lighting - - - - - -	4,153	4·20	5·460	6·300
Rental of meters - - - - - -	11	·01	·013	·015
Sale of old materials - - - - -	191	·19	·247	·285
Sale of residual products - - - -	7,739	7·81	10·153	11·715
Miscellaneous receipts - - - - -	102	·10	·130	·150
TOTAL Receipts - - -	38,653	39·03	50·739	58·545

- - - - - PHŒNIX GAS COMPANY, 1864.

Price of Coal per Ton, 15*s.* 1*d.*—88,380 Tons of Coal used in 1864.

Expenditure:	£.	Per Ton of Coal. s.	Per 1,000 Feet. Made. Pence.	Per 1,000 Feet. Sold. Pence.
Directors' allowances	2,000	·45	·585	·675
Salaries	2,280	·52	·676	·780
Collectors' commission	2,158	·49	·637	·735
Rents, rates, and taxes	4,370	·99	1·287	1·485
Stationery, printing, &c.	2,514	·57	·741	·855
Payment to auditors	100	·02	·026	·030
Coals, including dues, &c.	66,656	15·08	19·604	22·620
Purifying materials	1,650	·37	·481	·555
Supervision and labour	22,648	5·13	6·669	7·695
Retorts, tools, ordinary repairs, &c.	12,161	2·75	3·575	4·125
Ordinary repair, &c.	7,838	1·77	2·301	2·655
Restoring and replacing	2,767	·63	·819	·945
Additional	—	—	—	—
Law charges, &c.	702	·16	·208	·240
Reserve fund, &c.	—	—	—	—
Interest	420	·10	·130	·150
Bad debts	—	—	—	—
Redemption fund	—	—	—	—
Balances	72,127	16·32	21·216	24·480
Total Expenditure	200,394	45·35	58·955	68·025

- - - - - RATCLIFF GAS COMPANY, 1864.

Price of Coal per Ton, 15*s.*—19,807 Tons of Coal used in 1864.

Expenditure:	£.	Per Ton of Coal. s.	Per 1,000 Feet. Made. Pence.	Per 1,000 Feet. Sold. Pence.
Directors' allowances	800	·81	1·053	1·215
Salaries	785	·79	1·027	1·185
Collectors' commission	300	·30	·390	·450
Rents, rates, and taxes	1,075	1·09	1·417	1·635
Stationery, printing, &c.	483	·49	·637	·735
Payment to auditors	32	·03	·039	·045
Coals, including dues, &c.	14,855	15·00	19·500	22·500
Purifying materials	439	·44	·572	·660
Supervision and labour	5,763	5·81	7·553	8·715
Retorts, tools, ordinary repair, &c.	993	1·00	1·300	1·500
Ordinary repair, &c.	2,131	2·16	2·808	3·240
Restoring and replacing	5	·01	·013	·015
Additional	—	—	—	—
Law charges, &c.	150	·15	·195	·225
Reserve fund, &c.	—	—	—	—
Interest	222	·23	·299	·345
Bad debts	—	—	—	—
Redemption fund	—	—	—	—
Balance	10,620	10·72	13·936	16·080
Total Expenditure	38,653	39·03	50·739	58·545

App. No. 8.

SOUTH METROPOLITAN GAS COMPANY, 1864.

Price of Coal per Ton, 15 *s.* 2 *d.*—42,221 Tons of Coal used in 1864.

Receipt:	£.	*s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Sale of gas (less bad debts)	56,196	26·62	34·606	39·930
Public lighting	8,154	3·86	5·018	5·790
Rental of meters	—	—	—	—
Sale of old materials	198	·09	·117	·135
Sale of residual products	18,666	8·85	11·505	13·275
Miscellaneous receipts	2,341	1·11	1·443	1·665
Total Receipts	85,555	40·53	52·689	60·795

SURREY CONSUMERS' GAS COMPANY, 1864.

Price of Coal per Ton, 14 *s.* 6 *d.*—35,675 Tons of Coal used in 1864.

Receipt:	£.	*s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Sale of gas (less bad debts)	42,712	23·94	31·122	35·910
Public lighting	12,063	6·76	8·788	10·140
Rental of meters	—	—	—	—
Sale of old materials	368	·21	·273	·315
Sale of residual products	13,729	7·71	10·023	11·565
Miscellaneous receipts	3,107	1·74	2·262	2·610
Total Receipts	71,979	40·36	52·468	60·540

- - - SOUTH METROPOLITAN GAS COMPANY, 1864.

Price of Coal per Ton, 15 *s.* 2 *d.*—42,221 Tons of Coal used in 1864.

Expenditure:	£.	Per Ton of Coal. s.	Per 1,000 Feet. Made. Pence.	Per 1,000 Feet. Sold. Pence.
Directors' allowances	1,000	·47	·611	·705
Salaries	1,877	·89	1·157	1·335
Collectors' commission	850	·40	·520	·600
Rent, rates, and taxes	1,792	·85	1·105	1·275
Stationery, printing, &c.	1,170	·55	·715	·825
Payment to auditors	100	·05	·065	·075
Coals, including dues, &c.	32,016	15·17	19·721	22·755
Purifying materials	646	·31	·403	·465
Supervision and labour	11,776	5·58	7·254	8·370
Retorts, tools, ordinary repair	4,152	1·97	2·561	2·955
Ordinary repair, &c.	2,639	1·25	1·625	1·875
Restoring and replacing	2,892	1·37	1·781	2·055
Additional	990	·47	·611	·705
Law charges, &c.	173	·08	·104	·120
Reserve fund, &c.	—	—	—	—
Interest	—	—	—	—
Bad debts	302	·14	·182	·210
Redemption fund	—	—	—	—
Balance	23,180	10·98	14·274	16·470
Total Expenditure	85,555	40·53	52·689	60·795

- - SURREY CONSUMERS' GAS COMPANY, 1864.

Price of Coal per Ton, 14 *s.* 6 *d.*—35,675 Tons of Coal used in 1864.

Expenditure:	£.	Per Ton of Coal. s.	Per 1,000 Feet. Made. Pence.	Per 1,000 Feet. Sold. Pence.
Directors' allowances	1,500	·84	1·092	1·260
Salaries	958	·54	·702	·810
Collectors' commission	646	·36	·468	·540
Rent, rates, and taxes	1,740	·98	1·274	1·470
Stationery, printing, &c.	803	·45	·585	·675
Payment to auditors	63	·03	·039	·045
Coals, including dues, &c.	25,865	14·50	18·850	21·750
Purifying materials	675	·38	·494	·570
Supervision and labour	9,984	5·60	7·280	8·400
Retorts, tools, ordinary repair, &c.	3,345	1·87	2·431	2·805
Ordinary repair, &c.	1,851	1·04	1·352	1·560
Restoring and replacing	457	·26	·338	·390
Additional	68	·04	·052	·060
Law charges, &c.	254	·14	·182	·210
Reserve fund, &c.	—	—	—	—
Interest	1,779	1·00	1·300	1·500
Bad debts	396	·22	·286	·330
Redemption fund	—	—	—	—
Balance	21,595	12·11	15·743	18·165
Total Expenditure	71,979	40·36	52·468	60·540

App. No. 8.

WESTERN GAS COMPANY, 1864. - - - -

Price of Coal per Ton, 25 *s.* 2 *d.*—27,830 Tons of Coal used in 1864.

			Per 1,000 Feet.	
			Made.	Sold.
Receipt:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas (less bad debts) - - - -	72,086	51·81	62·072	70·980
Public lighting - - - - - -	9,677 *	6·95	8·340	9·522
Rental of meters - - - - - -	2,258	1·62	1·944	2·219
Sale of old materials - - - - -	95	·07	·084	·096
Sale of residual products - - - -	6,424	4·62	5·544	6·329
Miscellaneous receipts - - - -	—	—	—	—
Total Receipts - - -	90,540	65·07	78·084	89·146

* After deducting 1,680 *l.* 18 *s.* for lighting and repairing the public lamps.

App. No. 8.

WESTERN GAS COMPANY, 1864.

Price of Coal per Ton, 25*s.* 2*d.*—27,830 Tons of Coal used in 1864.

10,000 Feet made; 8,759 Feet sold.

Expenditure:	£.	Per Ton of Coal. *s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Directors' allowances	1,250	·90	1·080	1·233
Salaries	1,916	1·38	1·656	1·891
Collectors' commission	973	·70	·840	·959
Rents, rates, and taxes	1,033	·74	·888	1·014
Stationery, printing, &c.	780	·56	·672	·767
Payment to auditors	80	·06	·072	·082
Coals, including dues, &c.	35,019	25·17	30·204	34·483
Purifying materials	273	·20	·240	·274
Supervision and labour	8,195	5·89	7·068	8·069
Retorts, tools, ordinary repair	2,488	1·79	2·148	2·452
Ordinary repair, &c.	798	·57	·684	·781
Restoring and replacing	657	·47	·564	·644
Additional meters	—	—	—	—
Law charges, &c.	314	·22	·264	·301
Reserve fund	—	—	—	—
Interest	2,398	1·72	2·064	2·357
Bad debts	—	—	—	—
Redemption fund	26	·02	·024	·027
Balance	34,341	24·68	29·616	33·812
Total Expenditure	90,540	65·07	78·084	89·146

TABLE showing the Price and Tonnage of COAL used in 1864 by each COMPANY supplying GAS to the METROPOLIS, the present CAPITAL of each Company, and the Capital represented by each Ton of Coal.

NAME OF COMPANY.	Price of Coal per Ton from Mr. Moor's Return.	Tons of Coal used.	Capital.	Capital per Ton of Coal.
	s. *d.*		£.	
Chartered	17 3	145,148	780,000	5·37
City of London	14 11¾	58,473	435,445	7·45
Commercial	15 11	69,717	381,857	5·48
Equitable (Average, 15*s.* 7¾*d.*)	14 8 / 35 5	38,906	284,800	7·32
Great Central	13 10½	48,531	251,400	5·18
Imperial	16 4½	244,722	1,501,815	6·14
Independent	16 –	43,029	187,200	4·35
London (Average, 14*s.* 10¾*d.*)	14 5 / 31 5	85,488	656,017	7·67
Phœnix	15 1	88,380	759,000	8·59
Ratcliffe	15 –	19,807	104,448	5·27
South Metropolitan	15 2	42,221	200,000	4·74
Surrey Consumers	14 6	35,675	216,274	6·06
Western	25 2	27,830	303,050	10·89
		947,927	6,061,306	6·39

TABLE showing the COMPARATIVE EXPENDITURE per 1,000 Feet of GAS sold by each of the COMPANIES supplying GAS to the METROPOLIS in the Year 1864.

EXPENDITURE.	Chartered.	City of London.	Commercial.	Equitable.	Great Central.	Imperial.	Independent.	London.	Phœnix.	Ratcliff.	South Metropolitan.	Surrey Consumers.	Western
	Pence.												
1. Directors' Allowances	·495	·735	·645	1·005	·930	·300	·840	·525	·675	1·215	·705	1·260	1·233
2. Salaries	1·500	·750	·915	1·350	·855	·975	·930	1·215	·780	1·185	1·335	·810	1·891
3. Collectors' Commission	·705	·375	·585	·705	·540	·885	·345	7·50	·735	·450	·600	·540	·959
4. Rents, Rates, and Taxes	1·770	1·035	1·425	1·065	1·005	·915	·915	1·635	1·485	1·635	1·275	1·470	1·014
5. Stationery, printing, &c.	·735	·495	·930	·510	1·020	·465	·765	·735	·855	·735	·825	·675	·762
6. Payment to Auditors	·030	·060	·060	·075	·015	·015	·075	·030	·030	·045	·075	·045	·088
7. Coals, including dues	25·875	22·470	23·880	23·460	20·805	24·555	24,000	22·350	22·620	22·500	22·755	21·750	34·488
8. Purifying materials	·360	·330	1·200	·765	·360	·480	·480	·435	·555	·660	·465	·570	·274
9. Supervision and labour	6·135	7·995	7·380	4·920	6·855	7·665	8·700	6·615	7·695	8·715	8·370	8·400	8·068
10. Retorts, tools, ordinary repairs, &c.	4·905	3·480	2·310	3·825	2·355	6·510	1·665	10·470	4·125	1·500	2·955	2·805	2·452
11. Ordinary repair, and maintenance of mains, &c.	1·275	4·020	2·100	2·580	3·930	·795	1·410	2·850	2·655	3·240	1·875	1·560	·781
12. Restoring and replacing Meters	1·200	1·290	·330	·585	·645	·345	1·275	1·155	·945	·015	2·055	·390	·611
13. Additional Meters	·195	–	–	–	–	–	–	·525	–	–	·705	·060	–
14. Law charges	·120	·585	·195	·105	*a* 4·050	·225	·540	·390	·240	·225	·120	·210	·301
15. Reserve fund	·150	–	–	–	·390	5·220	4·980	*b* ·120	–	–	–	–	*b* ·027
16. Interest	–	1·470	·150	·435	2·040	4·155	·945	1·695	·150	·345	–	1·500	2·356
17. Bad debts	–	–	–	–	–	·375	·630	–	–	–	·210	·330	–
18. Balance, being Shareholders' profit	17·820	18·360	20·550	27·345	16·395	14·745	10·935	15·300	24·480	16·080	16·470	18·165	33·81
	63·570	63·450	62·685	68·730	62·220	68·625	59·730	66·795	68·025	58·545	60·795	60·540	89·14

b Called Redemption Fund in Account

TABLE showing EXPENDITURE per 1,000 Feet of GAS SOLD by each of the LONDON COMPANIES supplying GAS to the METROPOLIS in the Year 1864.

	Directors and Auditors.	Salaries and Commission to Collectors.	Rates and Taxes.	Stationery, Law Charges, and Incidentals.	Purifying Materials.	Wages and Supervision.	Repairs of Retorts, Works, and Mains.	Restoring and Replacing Meters.	Total.
Imperial	·315	1·860	·915	·690	·480	5·665	7·305	·345	19·273
Chartered	·525	2·205	1·770	·855	·660	6·135	6·180	1·200	19·530
Phœnix	·705	1·515	1·485	1·095	·555	7·695	6·780	·945	20·775
London	·555	1·965	1·635	1·125	·435	6·615	13·320	1·155	26·805
Commercial	·705	1·530	1·425	1·125	1·200	7·380	4·410	·330	18·105
City of London	·795	1·125	1·035	1·080	·330	7·995	7·500	1·290	21·150
Great Central	·975	1·395	1·005	5·070	·360	6·855	6·285	·645	22·590
Independent	·915	1·575	·915	1·305	·480	8·700	3·075	1·275	18·240
South Metropolitan	·780	1·935	1·275	·945	·465	8·370	4·830	2·055	20·655
Equitable	1·080	2·055	1·065	·615	·765	4·920	6·405	·585	17·490
Surrey Consumers	1·305	1·350	1·470	·885	·570	8·400	4·365	·390	18·735
Ratcliff	1·260	1·635	1·635	·960	·660	8·715	4·740	·015	19·620
Western	1·315	2·850	1·014	1·068	·274	8·069	3·233	·644	18·467

GAS COMPANIES supplying the METROPOLIS.

TABLE showing the CAPITAL and COST of COALS for each COMPANY in 1864, and the Amount of Capital employed for each 100*l.* expended in Coals.

COMPANY.	Capital.	Cost of Coals.	Capital per 100 *l.* expended in Coal.	
			1864.	1861.
	£.	£.	(A)	£.
Chartered	780,000	125,190	623	565
City of London	435,445	43,796	994	881
Commercial	381,857	55,488	688	636
Equitable	284,800	30,438	936	950
Great Central	251,400	33,666	747	774
*Imperial	1,501,815	200,354	750	811
Independent	187,200	34,423	544	534
London	656,017	63,700	1,030	1,059
Phœnix	759,000	66,656	1,139	860
Ratcliff	104,448	14,855	703	625
South Metropolitan	200,000	32,016	625	606
Surrey Consumers	216,274	25,865	836	826
Aggregate	5,758,256	726,447	793	764
Western	303,050	35,019	865	861
Aggregate	6,061,306	761,466 Increase over 1861 32,815 *l.*, or about 4 per cent.	796	769

* This is the real capital as compared with 1861, after correcting for the conversion of capitalized profit into 10 per cent. debentures

	£.
Thus Capital as in account	1,501,815
Difference between 338,403 *l.* and 130,000 *l.*	208,403
	1,710,218

(A): Cost of coal per ton. Capital per ton of coal.

App. No. 8.

1861.—CAPITAL, Receipt, and Expenditure of each Company supplying

CHARTERED GAS COMPANY, 1861. - - - -

TABLE showing Receipts per Ton of Coal.

Price of Coal per Ton, 19 *s.* 9 *d.*, from Mr. Moor's Return for 1863.—129,000 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
Receipt:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas (less bad debts) - - - -	189,715	29·41	38·233	44·115
Public lighting - - - - - -	17,946	2·78	3·614	4·170
Rental of meters - - - - - -	4,366	·68	·884	1·020
Sale of old materials - - - - -	621	·10	·130	·150
Sale of residual products - - - -	47,040	7·29	9·477	10·935
Miscellaneous receipts - - - - -	5,539	·86	1·118	1·290
Total Receipts - - -	265,227	41·12	53·456	61·680

CITY OF LONDON GAS COMPANY, 1861. - - -

Price of Coal per Ton 16 *s.* 3¾ *d.*—56,778 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
Receipt:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas (less bad debts) - - - -	77,712	27·37	35·581	41·055
Public lighting - - - - - -	3,565	1·26	1·638	1·890
Rental of meters - - - - - -	—	—	—	—
Sale of old materials - - - - -	999	·35	·455	·525
Sale of residual products - - - - -	23,297	8·21	10·673	12·315
Miscellaneous receipts - - - - -	12	·00	·000	·000
Total Receipts - - -	105,585	37·19	48·347	55·785

Gas to the Metropolis. Compiled from the Accounts printed by Parliament.

CHARTERED GAS COMPANY, 1861.

TABLE showing WORKING EXPENSES per TON of COAL.

Price of Coal per Ton, 19 *s.* 9 *d.*, from Mr. Moor's Return for 1863.—129,000 Tons of Coal used in 1861.

EXPENDITURE:	£.	Per Ton of Coal. *s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Directors' allowances	2,277	·35	·455	·525
Salaries	7,065	1·10	1·430	1·650
Collectors' commission	2,933	·45	·585	·675
Rents, rates, and taxes	8,455	1·31	1·703	1·965
Stationery, printing, &c.	2,575	·40	·520	·600
Payment to auditors	163	·02	·026	·030
Coals	127,387	19·75	25·675	29·625
Purifying materials	2,137	·33	·429	·495
Supervision and labour	25,518	3·96	5·148	5·940
Retorts, tools, ordinary repair, &c.	22,680	3·52	4·576	5·280
Ordinary repair of mains	4,951	·77	1·001	1·155
Restoring and replacing	4,859	·75	·975	1·125
Additional meters	768	·12	·156	·180
Interest	1,169	·18	·234	·270
Law and Parliamentary	1,458	·23	·299	·345
Bad debts	Nil.	—	—	—
Reserve fund	645	·10	130	·150
Balance	50,187	7·78	10·114	11·670
TOTAL Expenditure	265,227	41·12	53·456	61·680

CITY OF LONDON GAS COMPANY, 1861.

Price of Coal per Ton, 16 *s.* 3¾ *d.*—56,778 Tons of Coal used in 1861.

EXPENDITURE:	£.	Per Ton of Coal. *s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Directors' allowances	898	·32	·416	·480
Salaries	1,245	·44	·572	·660
Collectors' commission	610	·21	·273	·315
Rents, rates, and taxes	1,849	·65	·845	·975
Stationery, printing, &c.	966	·34	·442	·510
Payment to auditors	109	·04	·052	·060
Coals	46,310	16·31	21·203	24·465
Purifying materials	1,858	·65	·845	·975
Supervision and labour	17,713	6·24	8·112	9·360
Retorts, tools, ordinary repair, &c.	7,387	2·60	3·380	3·900
Ordinary repair of mains	5,365	1·89	2·457	2·835
Restoring and replacing	2,145	·76	·988	1·140
Additional meters	Nil.	—	—	—
Interest	2,441	·86	1·118	1·290
Law and Parliamentary	113	·04	·052	·060
Bad debts	Nil.	—	—	—
Reserve fund	Nil.	—	—	—
Balance	16,576	5·84	7·592	8·760
TOTAL Expenditure	105,585	37·19	48·347	55·785

App. No. 8.

COMMERCIAL GAS COMPANY, 1861 - - - -

Price of Coal per Ton, 16*s.* 4*d.*—63,637 Tons of Coals used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas - - - - - - - -	80,816	25·40	33·020	38·100
Public lighting - - - - - - -	13,509	4·25	5·525	6·375
Rental of meters - - - - - - -	—	—	—	—
Sale of old materials - - - - - -	—	—	—	—
Sale of residual products - - - -	21,393	6·72	8·736	10·080
Miscellaneous receipts - - - - -	533	·17	·221	·255
TOTAL Receipts - - -	116,251	36·54	47·502	54·810

EQUITABLE GAS COMPANY, 1861. - - - -

Price of Coal per Ton, 18*s.*—32,800 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas - - - - - - - -	58,748	35·82	46·566	53·730
Public lighting - - - - - - -	7,304	4·42	5·746	6·630
Rental of meters - - - - - - -	1,470	·89	1·157	1·335
Sale of old materials - - - - - -	220	·13	·169	·195
Sale of residual products - - - -	13,540	8·26	10·738	12·390
Miscellaneous receipts - - - - -	3,212	2·00	2·600	3·000
TOTAL Receipts - - -	84,494	51·52	66·976	77·280

App. No. 8.

- - - - COMMERCIAL GAS COMPANY, 1861.

Price of Coal per Ton, 16 *s.* 4 *d.*—63,637 Tons of Coal used in 1861.

Expenditure:	£.	Per Ton of Coal. s.	Per 1,000 Feet. Made. Pence.	Per 1,000 Feet. Sold. Pence.
Directors' allowances	1,500	·47	·611	·705
Salaries	1,806	·57	·741	·855
Collectors' commission	1,168	·37	·481	·555
Rents, rates, and taxes	2,484	·78	1·014	1·170
Stationery, printing, &c.	1,483	·47	·611	·705
Payment to auditors	150	·05	·065	·075
Coals	51,970	16·33	21·229	24·495
Purifying materials	1,884	·59	·767	·885
Supervision and labour	13,695	4·30	5·590	6·450
Retorts, tools, ordinary repair, &c.	5,035	1·58	2·054	2·370
Ordinary repair of mains	2,057	·65	·845	·975
Restoring and replacing	934	·29	·377	·435
Additional meters	1,245	·39	·507	·585
Interest	1,701	·54	·702	·810
Law and Parliamentary	1,242	·39	·507	·585
Bad debts	Nil.	—	—	—
Reserve fund	Nil.	—	—	—
Balance	27,897	8·77	11·401	13·155
Total Expenditure	116,251	36·54	47·502	54·810

- - - - EQUITABLE GAS COMPANY, 1861.

Price of Coal per Ton, 18 *s.*—32,800 Tons of Coal used in 1861.

Expenditure:	£.	Per Ton of Coal. s.	Per 1,000 Feet. Made. Pence.	Per 1,000 Feet. Sold. Pence.
Directors' allowances	1,000	·61	·793	·915
Salaries	1,438	·88	1·144	1·320
Collectors' commission	851	·52	·676	·780
Rents, rates, and taxes	918	·56	·728	·840
Stationery, printing, &c.	616	·37	·481	·555
Payment to auditors	60	·04	·052	·060
Coals	29,520	18·00	23·420	27·000
Purifying materials	741	·45	·585	·675
Supervision and labour	6,354	3·87	5·031	5·805
Retorts, tools, ordinary repair, &c.	5,257	3·20	4·160	4·800
Ordinary repair of mains	2,899	1·77	2·301	2·655
Restoring and replacing	1,199	·73	·949	1·095
Additional meters	Nil.	—	—	—
Interest	2,997	1·83	2·379	2·745
Law and Parliamentary	324	·20	·260	·300
Bad debts	Nil.	—	—	—
Reserve fund	Nil.	—	—	—
Balance	30,320	18·49	24·037	27·735
Total Expenditure	84,494	51·52	66·976	77·280

App. No. 8.

GREAT CENTRAL GAS COMPANY, 1861.

Price of Coal per Ton, 14 *s.* 10½ *d.*—41,358 Tons of Coal used in 1861.

Receipt:	£.	Per Ton of Coal. s.	Per 1,000 Feet. Made. Pence.	Per 1,000 Feet. Sold. Pence.
Sale of gas	54,075	26·15	33·995	39·225
Public lighting	7,808	3·77	4·901	5·655
Rental of meters	—	—	—	—
Sale of old materials	174	·08	·104	·120
Sale of residual products	20,625	9·98	12·974	14·970
Miscellaneous receipts	39	·02	·026	·030
Total Receipts	82,721	40·00	52·000	60·000

IMPERIAL GAS COMPANY, 1861.

Price of Coal per Ton, 16*s.* 10*d.*—231,525 Tons of Coal used in 1861.

Receipt:	£.	Per Ton of Coal. s.	Per 1,000 Feet. Made. Pence.	Per 1,000 Feet. Sold. Pence.
Sale of gas	291,996	25·22	32·786	37·830
Public lighting	64,933	5·61	7·293	8·415
Rental of meters	3,972	·34	·442	·510
Sale of old materials	1,377	·12	·156	·180
Sale of residual products	79,317	6·85	8·905	10·275
Miscellaneous receipts	8,593	·75	·975	1·125
Total Receipts	450,188	38·89	50·557	58·335

- - - - GREAT CENTRAL GAS COMPANY, 1861.

Price of Coal per Ton, 14 *s.* 10½ *d.*—41,358 Tons of Coal used in 1861.

Expenditure:	£.	Per Ton of Coal. s.	Per 1,000 Feet. Made. Pence.	Per 1,000 Feet. Sold. Pence.
Directors' allowances	1,000	·48	·624	·720
Salaries	1,046	·51	·663	·765
Collectors' commission	611	·30	·390	·450
Rents, rates, and taxes	1,246	·60	·780	·900
Stationery, printing, &c.	1,268	·61	·793	·915
Payment to auditors	84	·04	·052	·060
Coals	30,760	14·87	19·331	22·305
Purifying materials	726	·35	·455	·525
Supervision and labour	10,382	5·02	6·526	7·530
Retorts, tools, ordinary repair, &c.	3,603	1·74	2·262	2·610
Ordinary repair of mains	5,150	2·49	3·237	3·735
Restoring and replacing	519	·25	·325	·375
Additional meters	—	—	—	—
Interest	3,299	1·60	2·080	2·400
*Law and Parliamentary	8,105	3·92	5·096	5·880
Bad debts	—	—	—	—
Reserve fund	10,704	5·18	6·734	7·770
Balance	4,218	2·04	2·652	3·060
Total Expenditure	82,721	40·00	52·00	60·000

* Includes Wood-street Fire and *re* Croll.

- - - - IMPERIAL GAS COMPANY, 1861.

Price of Coal per Ton, 16 *s.* 10 *d.*—231,525 Tons of Coal used in 1861.

Expenditure:	£.	Per Ton of Coal. s.	Per 1,000 Feet. Made. Pence.	Per 1,000 Feet. Sold. Pence.
Directors' allowances	2,493	·22	·286	·330
Salaries	9,957	·86	1·118	1·290
Collectors' commission	5,676	·49	·637	·735
Rents, rates, and taxes	7,391	·64	·832	·960
Stationery, printing, &c.	4,063	·85	·455	·525
Payment to auditors	157	·01	·013	·015
Coals	194,868	16·84	21·892	25·260
Purifying materials	5,209	·45	·585	·675
Supervision and labour	50,799	4·39	5·707	6·585
Retorts, tools, ordinary repair, oil, tallow, &c.	28,137	2·43	3·159	3·645
Ordinary repair of mains	9,157	·79	1·027	1·185
Restoring and replacing	1,523	·13	·169	·195
Additional meters	—	—	—	—
Interest	22,687	1·96	2·548	2·940
Law and Parliamentary	5,074	44	·572	·660
Bad debts	—	—	—	—
Reserve fund	3,520	·30	·390	·450
Balance	99,477	8·59	11·167	12·885
Total Expenditure	450,188	38·89	50·557	58·335

App. No. 8.

INDEPENDENT GAS COMPANY, 1861.

Price of Coal per Ton, 16 *s.* 6 *d.*—42,371 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	old.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas (less bad debts)	51,098	24·11	31·343	36·165
Public lighting	7,263	3·43	4·459	5·145
Rental of meters	1,699	·80	1· 40	1·200
Sale of old materials	109	·05	·065	·075
Sale of residual products	14,939	7·05	9·165	10 577
Miscellaneous receipts	—	—	—	—
Total Receipts	75,108	35·44	46·072	53·160

LONDON GAS COMPANY, 1861.

Price of Coal per Ton, 15 *s.* 9 *d.*—78,127 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas	109,739	28·09	36·517	42·135
Public lighting	17,944	4·60	5·980	6·900
Rental of meters	2,120	·54	·702	·810
Sale of old materials	390	·10	·130	·150
Sale of residual products	35,454	9·08	11·804	13·620
Miscellaneous receipts	2,425	·62	·806	·930
TOTAL Receipts	168,072	43·03	55·939	64·545

- - - - INDEPENDENT GAS COMPANY, 1861.

Price of Coal per Ton, 16 *s.* 6 *d.*—42,371 Tons of Coal used in 1861.

Expenditure:	£.	Per Ton of Coal. *s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Directors' allowances	1,050	·50	·650	·750
Salaries	2,734	1·29	1·677	1·935
Collectors' commission	858	·41	·533	·615
Rents, rates, and taxes	1,488	·70	·910	1·050
Stationery, printing, &c.	598	·28	·364	·420
Payment to auditors	100	·05	·065	·075
Coals	34,956	16·50	21·450	24·750
Purifying materials	545	·23	·299	·345
Supervision and labour	9,813	4·63	6·019	6·945
Retorts, tools, ordinary repair	1,521	·72	·936	1·080
Ordinary repair of mains	3,743	1·77	2·301	2·655
Restoring and replacing	1,699	·80	1·040	1·200
Additional meters	—	—	—	—
Interest	1,298	·62	·806	·930
Law and Parliamentary	—	—	—	—
Bad debts	—	—	—	—
Reserve fund	—	—	—	—
Balance	14,702	6·94	9·022	10·410
Total Expenditure	75,108	35·44	46·072	53·160

- - - - LONDON GAS COMPANY, 1861.

Price of Coal per Ton, 15 *s.* 9 *d.*—78,127 Tons of Coal used in 1861.

Expenditure:	£.	Per Ton of Coal. *s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Directors' allowances	1,393	·36	·468	·540
Salaries	2,042	·52	·676	·780
Collectors' commission	1,873	·48	·624	·720
Rents, rates, and taxes	5,261	1·35	1·755	2·025
Stationery, printing, &c.	2,210	·57	·741	·855
Payment to auditors	96	·02	·026	·030
Coals	61,525	17·75	20·475	23·625
Purifying materials	1,725	·44	·572	·660
Supervision and labour	15,761	4·03	5·239	6·045
Retorts, tools, ordinary repair, &c.	22,881	5·86	7·618	8·790
Ordinary repair of mains	11,509	2·95	3·835	4·425
Restoring and replacing	3,137	·80	1·040	1·200
Additional meters	70	·02	·026	·030
Interest	4,881	·25	1·625	1·875
Law and Parliamentary	551	·14	·182	·210
Bad debts	—	—	—	—
Reserve fund	—	—	—	—
Balance	33,157	8·49	11·037	12·735
Total Expenditure	168,072	43·03	55·939	64·545

App. No. 8.

PHŒNIX GAS COMPANY, 1861.

Price of Coal per Ton, 16 *s.* 1 *d.*—71,599 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas (less bad debts)	108,958	30·44	39·572	45·660
Public lighting	18,174	5·08	6·604	7·620
Rental of meters	—	—	—	—
Sale of old materials	504	·14	·182	·210
Miscellaneous receipts	—	—	—	—
Sale of residual products	34,556	9·65	12·545	14·475
TOTAL Receipts	162,192	45·31	58·903	67·965

RATCLIFF GAS COMPANY, 1861.

Price of Coal per Ton, 17 *s.*—18,668 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas (less bad debts)	23,442	25·12	32·656	37·680
Public lighting	4,035	4·32	5·616	6·480
Rental of meters	12	·01	·013	·015
Sale of old materials	39	·04	·052	·060
Sale of residual products	7,040	7·55	9·815	11·325
Miscellaneous receipts	49	·05	·065	0·75
TOTAL Receipts	34,617	37·09	48·217	55·632

PHŒNIX GAS COMPANY, 1861.

Price of Coal per Ton, 16 *s.* 1 *d.*—71,599 Tons of Coal used in 1861.

Expenditure:	£.	Per Ton of Coal. *s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Directors' allowances	1,500	·42	·546	·630
Salaries	4,968	1·39	1·807	2·085
Collectors' commission	1,763	·49	·637	·735
Rents, rates, and taxes	4,961	1·39	1·807	2·085
Stationery, printing, &c.	1,988	·56	·728	·840
Payment to auditors	100	·03	·039	·045
Coals	57,577	16·08	20·904	24·120
Purifying materials	1,119	·31	·403	·465
Supervision and labour	15,385	4·30	5·590	6·450
Retorts, tools, ordinary repair	12,582	3·52	4·576	·280
Ordinary repair of mains	7,350	2·05	2·665	3·075
Restoring and replacing	2,421	·68	·884	1·020
Additional meters	Nil.	—	—	—
Interest	261	·07	·091	·105
Law and Parliamentary	308	·09	·117	·135
Bad debts	Nil.	—	—	—
Reserve fund	Nil.	—	—	—
Balance	49,909	13·93	18·109	20·895
Total Expenditure	162,192	45·31	58·903	67,965

RATCLIFF GAS COMPANY, 1861.

Price of Coal per Ton, 17 *s.*—18,668 Tons of Coal used in 1861.

Expenditure:	£.	Per Ton of Coal. *s.*	Per 1,000 Feet. Made. *Pence.*	Per 1,000 Feet. Sold. *Pence.*
Directors' allowances	525	·56	·728	·840
Salaries	600	·64	·832	·960
Collectors' commission	272	·29	·377	·435
Rents, rates, and taxes	1,172	1·26	1·638	1·890
Stationery, printing, &c.	621	·67	·871	1·005
Payment to auditors	20	·02	·026	·030
Coals	15,868	17·00	22·100	25·500
Purifying materials	647	·70	·910	1·050
Supervision and labour	5,127	5·49	7·137	8·235
Retorts, tools, ordinary repair	1,579	1·69	2·197	2·535
Ordinary repair of mains	781	·84	1·092	1·260
Restoring and replacing	18	·02	·026	·030
Additional meters	3	·00	—	—
Interest	729	·78	1·014	1·170
Law and Parliamentary	399	·43	·559	·645
Bad debts	Nil.	—	—	—
Reserve fund	Nil.	—	—	—
Balance	6,256	6·70	8·710	10·050
Total Expenditure	34,617	37·09	48·217	55·635

App. No. 8.

SOUTH METROPOLITAN GAS COMPANY, 1861.

Price of Coal per Ton, 15 *s.* 3 *d.*—32,205 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas	46,347	28·78	37·414	43·170
Public lighting	11,060	6·87	8·931	10·305
Rental of meters	115	·07	·091	·105
Sale of old materials	534	·33	·429	·495
Sale of residual products	16,419	10·20	13 260	15·300
Miscellaneous receipts	1,002	·62	·806	·930
TOTAL Receipts	75,477	46·87	60·931	70·305

SURREY CONSUMERS' GAS COMPANY, 1861.

Price of Coal per Ton, 14 *s.*—31,966 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas	36,070	22·56	29·328	33·840
Public lighting	10,341	6·47	8·411	9·705
Rental of meters	Nil.	—	—	—
Sale of old materials	Nil.	—	—	—
Sale of residual products	15,492	9·70	12·60	14·550
Miscellaneous receipts	719	·45	·585	·675
TOTAL Receipts	62,622	39·18	50·934	58·770

- - - SOUTH METROPOLITAN GAS COMPANY, 1861.

Price of Coal per Ton, 15 *s.* 3 *d.*—32,205 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
EXPENDITURE:	£.	*s.*	*Pence.*	*Pence.*
Directors' allowances	1,000	·62	·806	·930
Salaries	1,877	1·16	1·508	1·740
Collectors' commission	724	·45	·585	·675
Rents, rates, and taxes	1,917	1·19	1·547	1·785
Stationery, printing, &c.	1,982	1·23	1·599	1·845
Payment to auditors	63	·04	·052	·060
Coals	24,556	15·25	19·825	22·875
Purifying materials	834	·52	·676	·780
Supervision and labour	11,347	7·05	9·165	10·575
Retorts, tools, ordinary repairs, &c.	4,051	2·52	3·276	3·780
Ordinary repair of mains	2,864	1·78	2·314	2·670
Restoring and replacing	1,651	1·02	1·326	1·530
Additional meters	958	·59	·767	·885
Interest	Nil.	—	—	—
Law and Parliamentary	45	·03	·039	·045
Bad debts	Nil.	—	—	—
Reserve fund	18,499	11·49	14·937	17·235
Balance	3,109	1·93	2·509	2·895
TOTAL Expenditure	75,477	46·87	60·931	70·305

- - - SURREY CONSUMERS' GAS COMPANY, 1861.

Price of Coal per Ton, 14 *s.*—31,966 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
EXPENDITURE:	£.	*s.*	*Pence.*	*Pence.*
Directors' allowances	800	·50	·650	·750
Salaries	1,950	1·22	1·586	1·830
Collectors' commission	617	·38	·494	·570
Rents, rates, and taxes	1,319	·82	1·066	1·230
Stationery, printing, &c.	334	·21	·273	·315
Payment to auditors	32	·02	·026	·030
Coals	22,376	14·00	18·200	21·000
Purifying materials	333	·21	·273	·315
Supervision and labour	15,195	9·51	12·363	14·265
Retorts, tools, ordinary repair, &c.	4,053	2·54	3·302	3·810
Ordinary repair of mains	136	·08	·104	·120
Restoring and replacing	418	·26	·338	·390
Additional meters	58	·04	·052	·060
Interest	1,643	1·03	1·339	1·545
Law and parliamentary	64	·04	·052	·060
Bad debts	Nil.	—	—	—
Reserve fund	Nil.	—	—	—
Balance	13,294	8·32	10·816	12·480
TOTAL Expenditure £.	62,622	39·18	50·934	58·770

App. No. 8.

WESTERN GAS COMPANY, 1861 - - - - -

Price of Coal per Ton, 24 *s.* 7 *d.*—25,121 Tons of Coal used in 1861.
10,000 cubic feet, 1·2, made; 8,759 cubic feet, 1·37, sold.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
RECEIPT:	£.	*s.*	*Pence.*	*Pence.*
Sale of gas - - - - - - -	51,504	41·01	49·212	56·184
Public lighting - - - - - -	10,631	8·46	10·152	11·590
Rental of meters - - - - - -	1,900	1·51	1·812	2·069
Sale of old materials - - - - -	72	·06	·072	·082
Sale of residual products - - - -	6,189	4·93	5·916	6·754
Miscellaneous receipts - - - - -	Nil.	—	—	—
TOTAL Receipts - - -	70,296	55·97	67·164	76·679

- - - - WESTERN GAS COMPANY, 1861.

Price of Coal per Ton, 24 *s.* 7 *d.*—25,121 Tons of Coal used in 1861.

		Per Ton of Coal.	Per 1,000 Feet.	
			Made.	Sold.
EXPENDITURE:	£.	*s.*	*Pence.*	*Pence.*
Directors' allowances - - - - -	1,000	·80	·960	1·096
Salaries - - - - - - - - -	2,825	2·25	2·700	3·083
Collectors' commission - - - -	779	·62	·744	·849
Rents, rates, and taxes - - - -	861	·69	·828	·945
Stationery, printing, &c. - - - -	637	·51	·612	·699
Payment to auditors - - - - -	80	·06	·072	·082
Coals - - - - - - - - -	30,878	24·58	29·496	33·675
Purifying materials - - - - -	256	·20	·240	·274
Supervision and labour - - - -	5,821	4·64	5·568	6·357
Retorts, tools, ordinary repair - - -	3,960	3·16	3·792	4·329
Ordinary repair of mains - - - -	583	·46	·552	·630
Restoring and replacing - - - -	400	·32	·384	·438
Additional meters - - - - -	nil.	—	—	—
Interest - - - - - - - - -	2,501	1·99	2·388	2·726
Law and Parliamentary - - - -	696	·55	·660	·754
Bad debts - - - - - - - -	388	·31	·372	·425
Reserve fund - - - - - - -	nil.	—	—	—
Balance - - - - - - - - -	18,631	14·83	17·796	20·317
TOTAL Expenditure - -	70,296	55·97	67·164	76·679

TABLE showing the Price and Tonnage of COAL used in 1861 by each COMPANY supplying GAS to the METROPOLIS, the present CAPITAL of each Company, and the Capital represented by each Ton of Coal.

NAME OF COMPANY.	Price of Coal per Ton from Mr. Moor's Return.	Tons of Coal used.	Capital.	Capital per Ton of Coal.
	s. *d.*		£.	£.
1. Chartered	19 9	129,000	719,460	5·58
2. City of London	16 3¾	56,778	407,805	7·18
3. Commercial	16 4	63,637	330,539	5·19
4. Equitable	18 –	32,800	280,400	8·55
5. Great Central	14 10½	41,358	238,160	5·76
6. Imperial	16 10	231,525	1,579,755	6·82
7. Independent	16 6	42,371	186,782	4·41
8. London	15 9	78,127	651,692	8·34
9. Phœnix	16 1	71,599	540,000	7·55
10. Ratcliff	17 –	18,668	99,097	5·31
11. South Metropolitan	15 3	32,205	163,526	5·08
12. Surrey Consumers'	14 –	31,966	184,894	5·78
13. Western	24 7	25,121	265,791	10·58
		855,155	5,647,901	6·60

TABLE showing the COMPARATIVE EXPENDITURE per 1,000 Feet of GAS sold by each of the COMPANIES supplying GAS to the METROPOLIS in the Year 1861.

EXPENDITURE.	Chartered.	City of London.	Commercial.	Equitable.	Great Central.	Imperial.	Independent.	London.	Phœnix.	Ratcliff.	South Metropolitan.	Surrey Consumers'.	Western
	Pence.												
1. Directors' Allowances	·525	·480	·705	·915	·720	·330	·750	·540	·630	·840	·930	·750	1·096
2. Salaries	1·650	·660	·855	1·320	·765	1·290	1·935	·780	2·085	·960	1·740	1·830	3·083
3. Collectors' Commission	·675	·315	·555	·780	·450	·735	·615	·720	·735	·433	·675	·570	·849
4. Rents, Rates, and Taxes	1·965	·975	1·170	·840	·900	·960	1·050	2·025	2·085	1·890	1·785	1·230	·945
5. Stationery, printing, &c.	·600	·510	·705	·555	·915	·525	·420	·855	·840	1·005	1·845	·315	·699
6. Payment to Auditors	·030	·060	·075	·060	·060	·015	·075	·030	·045	·030	·060	·030	·082
7. Coals, including dues	29·625	24·465	24·495	27·000	22·305	25·260	24·750	23·625	24·120	25·500	22·875	21·000	33·675
8. Purifying materials	·495	·975	·885	·675	·525	·675	·345	·660	·465	1·050	·780	·315	·274
9. Supervision and labour	5·940	9·360	6·450	5·805	7·530	6·585	6·945	6·045	6·450	8·235	10·575	14·265	6·357
10. Retorts, tools, ordinary repairs, &c.	5·280	3·900	2·370	4·800	2·610	3·645	1·080	8·790	5·280	2·535	3·780	3·810	4·329
11. Ordinary repair, and maintenance of mains, &c.	1·155	2·835	·975	2·655	3·795	1·185	2·655	4·425	3·075	1·260	2·670	·120	·630
12. Restoring and replacing Meters	1·125	1·140	·435	1·095	·375	·195	1·200	1·200	1·020	·030	1·530	·390	·438
13. Additional Meters	·180	–	·585	–	–	–	–	·030	–	–	·885	·060	–
14. Law charges	·345	·060	·585	·300	*5·880	·660	–	·210	·135	·645	·045	·060	·754
15. Reserve fund	·150	–	–	–	7·770	·450	–	–	–	–	17·235	–	–
16. Interest	·270	1·290	·810	2·745	2·400	2·940	·930	1·875	·105	1·170	–	1·545	2·726
17. Bad debts	–	–	–	–	–	–	–	–	–	–	–	–	·425
18. Balance	11·670	8·760	13·155	27·735	3·060	12·885	10·410	12·735	20·895	10·050	2·895	12·480	20·317
	61·680	55·785	54·810	77·280	60·000	58·335	53·160	64·545	67·965	55·635	70·305	58·770	76·679

* Includes Wood-street fire and *Re* Croll.

TABLE showing EXPENDITURE per 1,000 feet of GAS Sold by each of the LONDON COMPANIES supplying GAS to the METROPOLIS in the Year 1861.

	Directors and Auditors.	Salaries and Commission to Collectors.	Rates and Taxes.	Stationery, Law Charges, and Incidentals.	Purifying Materials.	Wages and Supervision.	Repairs of Retorts, Works, and Mains.	Restoring and Replacing Meters.	Total.
Chartered - - - -	·555	2·325	1·965	·945	·495	5·940	6·435	1·125	19·785
City of London - - -	·540	·075	·975	·570	·975	9·360	6·735	1·140	21·270
Commercial - - -	·780	1·410	1·170	1·290	·885	6·450	3·345	·435	15·765
Equitable - - - -	·975	2·100	·840	·855	·675	5·805	7·455	1·095	19·800
Great Central - - -	·780	1·215	·900	6·795	·525	7·530	6·345	·375	24·465
Imperial - - - -	·345	2·025	·960	1·185	·675	6·585	1·380	·195	13·350
Independent - - -	·825	2·550	1·050	·420	·345	6·945	3·735	1·200	17·070
London - - - -	·570	1·500	2·025	1·065	·660	6·045	13·215	1·200	26·280
Phœnix - - - -	·675	2·820	2·085	·975	·465	6·450	8·355	1·020	22·845
South Metropolitan - -	·990	2·415	1·785	1·890	·780	10·575	6·450	1·530	26·415
Surrey Consumers' - -	·780	2·400	1·230	·375	·315	14·265	3·930	·390	23·685
Western - - - -	1·178	3·932	·945	1·453	·274	6·357	4·959	·438	19·536
Ratcliff - - - -	·870	1·395	1·890	1·650	1·050	8·235	3·795	·030	18·910

Appendix, No. 9.

PAPERS handed in by Mr. *Heywood*, 7 May 1866.

I.—TABLE showing the PRICES charged per 1,000 Cubic Feet for GAS for Private Consumption, by the Companies supplying the City of *London*, and the PRICES paid by the Commissioners of City Sewers for lighting the Public Lamps, from 1823 to 1866, inclusive.

	Name of Company contracting with the Commissioners for the Public Lights.							
	City of London Gas Company.		Chartered Gas Company.		Great Central Gas Company.		REMARKS.
	Price per 1,000 Cubic Feet, supplied by Meter to Inhabitants.	Batswing Burner; Estimated Consumption, 5 Cubic Feet per Hour; Price per Lamp, per Annum, including Lighting, Extinguishing, and Repairing.	Price per 1,000 Cubic Feet, supplied by Meter to Inhabitants.	Batswing Burner; Estimated Consumption, 5 Cubic Feet per Hour; Price per Lamp, per Annum, including Lighting, Extinguishing, and Repairing.	Price per 1,000 Cubic Feet, supplied by Meter to Inhabitants.	Batswing Burner; Estimated Consumption, 5 Cubic Feet per Hour; Price per Lamp, per Annum, including Lighting, Extinguishing, and Repairing.	
	s. d. *s. d.*	£. *s. d.*	*s. d.* *s. d.*	£. *s. d.*	*s. d.* *s. d.*	£. *s. d.*	
1823	- - 15 -	5 5 -	- - 15 -	5 5 -	—	—	
1824	- - 15 -	5 5 -	- - 15 -	5 5 -	—	—	
1825	- - 15 -	5 5 -	- - 15 -	5 5 -	—	—	
1826	- - 15 -	5 5 -	- - 15 -	5 5 -	—	—	
1827	- - 15 -	4 14 6	- - 15 -	4 14 6	—	—	
1828	- - 13 6	4 14 6	- - 13 6	4 14 6	—	—	
1829	- - 13 6	4 14 6	- - 13 6	4 14 6	—	—	
1830	- - 13 6	4 14 6	- - 13 6	4 14 6	—	—	
1831	- - 12 6	4 14 6	- - 12 6	4 14 6	—	—	
1832	- - 12 6	4 10 -	- - 12 6	4 10 -	—	—	
1833	- - 10 -	4 10 -	- - 11 3	4 10 -	—	—	
1834	- - 10 -	4 10 -	- - 10 -	4 10 -	—	—	
1835	- - 10 -	4 10 -	- - 10 -	4 10 -	—	—	
1836	10 - & 9 -	4 10 -	10 - & 9 -	4 10 -	—	—	
1837	- - 9 -	4 10 -	- - 9 -	4 10 -	—	—	
1838	- - 9 -	4 10 -	- - 9 -	4 10 -	—	—	
1839	- - 9 -	4 10 -	- - 9 -	4 10 -	—	—	
1840	- - 9 -	4 10 -	- - 9 -	4 10 -	—	—	
1841	- - 9 -	4 10 -	- - 9 -	4 10 -	—	—	
1842	- - 9 -	4 10 -	- - 9 -	4 10 -	—	—	
1843	- - 8 -	4 10 -	- - 8 -	4 10 -	- - -	- - -	Contracts let annually, for one year from 25th June.
1844	8 - & 7 -	4 10 -	8 - & 7 -	4 4 -	- - -	- - -	
1845	- - 7 -	4 4 -	- - 7 -	4 4 -	- - -	- - -	
1846	- - 7 -	4 4 -	- - 7 -	4 4 -	- - -	- - -	
1847	7 - & 6 -	4 4 -	7 - & 6 -	4 4 -	- - -	- - -	Reduced at Lady Day to 6 *s.* per 1,000.
1848	- - 6 -	4 4 -	- - 6 -	4 4 -	—	—	
1849	5 - & 4 -	4 4 -	5 - & 4 -	4 4 -	- - -	- - -	Reduced at Midsummer to 5 *s.*, and at Christmas to 4 *s.*
1850	- - 4 -	4 4 -	- - 4 -	4 4 -	—	—	
1851	- - 4 -	- - -	- - 4 -	- - -	- - 4 -	3 17 6	Contract for the whole City, taken by the Great Central Gas Company.
1852	- - 4 -	- - -	- - 4 -	3 12 -	- - 4 -	3 17 6	
1853	- - 4 -	- - -	- - 4 -	2 19 6	- - 4 -	3 3 -	Contracts let for three years.
1854	- - 4 -	- - -	- - 4 -	2 19 6	- - 4 -	3 3 -	
1855	- - 4 -	- - -	- - 4 -	2 19 6	- - 4 -	3 3 -	
1856	- - 4 -	- - -	- - 4 -	4 2 -	- - 4 -	4 4 -	- - ditto.
1857	- - 4 -	- - -	- - 4 -	4 2 -	- - 4 -	4 4 -	
1858	- - 4 -	- - -	- - 4 -	4 2 -	- - 4 -	4 4 -	
1859	- - 4 -	- - -	- - 4 -	4 8 -	- - 4 -	4 10 -	Contracts let for three years, raised at Michaelmas to 4 *s.* 6 *d.*
1860	- - 4 -	- - -	- - 4 -	4 8 -	- - 4 -	4 10 -	
1861	4 - & 4 6	- - -	4 - & 4 6	4 8 -	4 - & 4 6	4 10 -	
1862	- - 4 6	- - -	- - 4 6	4 14 6	- - 4 6	3 - -	The Contracts with the Great Central Gas Company were for 3 feet burners, the Chartered, 5 feet burners.
1863	- - 4 6	- - -	- - 4 6	5 9 6	- - 4 6	3 10 -	
1864	- - 4 6	- - -	- - -	5 9 6	- - 4 6	3 12 6	
1865	- - 4 6	- - -	- - 4 6	5 9 6	- - 4 6	5 8 6	
1866	- - 4 -	- - -	- - 4 -	5 1 -	- - 4 -	4 17 6	

The Contracts for Public Lighting were let from Midsummer to Midsummer until the passing of the Metropolis Gas Act of 1860, by which Act all then existing Contracts between the District Boards and the Metropolis Gas Companies were made to expire on 31st January 1862; from that time the Contracts have been let from 1st February.

App. No. 9.

II.—TABLE showing the per-Centage of Increase in the Price paid at various Periods for Lighting the Public Lamps.

The Price charged for Burners consuming Five Cubic Feet of Gas per Hour in 1866, is by

The Chartered Gas Company, £. 5. 1.					The Great Central Gas Company, £. 4. 17. 6.				
Being 3·81 per cent.	less	than	in	1823					
6·88	„	more	than	in 1827					
12·22	„	„		in 1832					
20·24	„	„		in 1844					
					Being 25·80 per cent.	more	than	in	1851
40·28	„	„		in 1852	25·80	„	„	in	1852
69·75	„	„		in 1853	54·76	„	„	in	1853
23·17	„	„		in 1856	16·07	„	„	in	1856
14·77	„	„		in 1859	8·33	„	„	in	1859
6·88	„	„		in 1862					
7·76	„	less	than	in 1863					
7·76	„	„		in 1865	10·14 per cent.	less	than	in	1865

App. No. 10.

Appendix, No. 10.

PAPER handed in by Mr. *Stevenson*, 7 May 1866.

GREAT CENTRAL GAS COMPANY.

STATEMENT of PROFITS and their appropriation in each of the years 1861 to 1864, inclusive.

		£.	
1861.	Wood-street fire	2,500	
	Award re Croll	1,035	
	Reserve fund	10,704	
	Balance for shareholders' profit	15,494	
	Balance to revenue next year	1,526	
		31,259	
	Deduct Balances from last year	12,801	
	£.	18,458	= 10·72 per cent.

On the invested Capital of 172,160 *l.*

		£.	
1862.	Wood-street fire	3,500	
	Award re Croll	1,035	
	Reserve fund	8,551	
	Balance for shareholders' profit	31,026	
	Balance to revenue next year	1,341	
		45,453	
	Deduct Balances from last year	17,394	
	£.	28,059	= 15·13 per cent.

On the invested Capital of 185,400 *l.*

		£.	
1863.	Wood-street fire	4,750	
	Award re Croll	1,035	
	Reserve fund	6,073	
	Balance for shareholders' profit	42,275	
	Balance to revenue next year	1,972	
		56,105	
	Deduct Balances from last year	28,338	
	£.	27,767	= 14·98 per cent.

On the invested Capital of 185,400 *l.*

		£.	
1864.	Wood-street fire	4,750	
	Award re Croll	1,035	
	Reserve fund	627	
	Balance for shareholders' profit	47,429	
	Balance to revenue next year	528	
		54,369	
	Deduct Balances from last year	21,440	
	£.	32,929	= 17·76 per cent.

On the invested Capital of 185,400 *l.*

Appendix, No. 11.

PAPER handed in by Mr. *Romans*, 7 May 1866.

MONTHLY AVERAGE of illuminating Power of the EDINBURGH GAS COMPANY'S GAS, from 1st August 1863 to 24th April 1866. App. No. 11.

1863:	September,	equal to	30·28	S. Candles.	1865: April,	equal to	28·28 S. Candles.
	October	„	31·60	„	May	„	30·19 „
	November	„	31·92	„	June	„	28·12 „
	December	„	32·16	„	July	„	30·40 „
1864:	January	„	31·84	„	August	„	28·82 „
	February	„	32·55	„	September	„	28·86 „
	March	„	31·11	„	October	„	30·32 „
	April	„	32·55	„	November	„	30·01 „
	May	„	30·60	„	December	„	28·53 „
	June	„	31·36	„	1866: January	„	27·97 „
	July	„	27·41	„	February	„	27·97 „
	August	„	27·84	„	March	„	26·62 „
	September	„	26·48	„	April	„	26·63 „
	October	„	29·39	„			
	December	„	28·85	„		31	914·88
1865:	January	„	28·30	„			
	February	„	29·50	„	Average - -		29·51 Standard Sperm Candles.
	March	„	28·44	„			

31)914·88(29·51 S. Candles.
62
294
279
158
155
38
31

Appendix, No. 12.

PAPER handed in by Mr. *Hedley*, 7 May 1866.

SHARE LIST of METROPOLITAN GAS COMPANIES. App. No. 12.

NAME OF COMPANY.	Amount Paid up per Share.	Present Dividend.	1859. Price per Share.	1865. Price per Share.
Chartered - - - - -	50	10	63 to 65	78 to 80
City of London - - - -	20	10	100 „ 105 for 150 *l.* Share	30
Commercial - - - - -	25	10	27 to 28	42¾ „ 43½
Crystal Palace District - - -	10	10	10½ „ 11	17¼ „ 17¾
Equitable - - - - -	50	10	52 „ 54	84 „ 86
Great Central - - - -	10	10	10¼ „ 10¾	17 „ 17¼
Imperial - - - - -	50	10	83 „ 85	86
Independent - - - - -	40	10	49 „ 51	71 „ 73
London - - - - -	50	10	30 „ 32 in 1858, 12 *l.*	80 „ 82
Phœnix - - - - -	60	10	62 to 64	80 „ 90
Ratcliff - - - - - -	10	10	15 „ 16	35 „ 37
South Metropolitan - - -	50	10	41 „ 43	81 „ 83
Surrey Gas Consumers' - - -	10	10	10¾ „ 11¼	15 „ 16
Western (Limited) - - - -	10	10	10¼ „ 10¾	16 „ 16½

Appendix, No. 13.

PAPERS handed in by the Gas Companies, 7 May 1866.

I.—COPY of the ACCOUNT which the several METROPOLITAN GAS COMPANIES are required to make to the SECRETARY of STATE (under the METROPOLIS GAS ACT, 1860). For the year 1865.

CHARTERED GAS COMPANY.

ANNUAL STATEMENT of ACCOUNTS, showing the actual State and Condition of the Concerns of the GAS LIGHT and COKE COMPANY, for the Twelve Months ended the 25th day of December 1865.

1. CAPITAL.—STATE of the ACCOUNT at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	TOTAL Paid up.	TOTAL CAPITAL.
Shares:		£.	£.	£.	£.
50 Geo. 3, c. 163, s. 2	4,000	50	50	200,000	
56 Geo. 3, c. 87, s. 2	4,000	50	50	200,000	
59 Geo. 3, c. 20, s. 2	4,000	50	50	200,000	
4 Geo. 4, c. 119, s. 1	6,000	50	30	180,000	
					780,000
				TOTAL CAPITAL £.	780,000

BALANCES brought forward.

	Christmas 1864.			Christmas 1865.		
	£.	s.	d.	£.	s.	d.
Depreciation Fund	653	4	1	794	4	3
Reserve Fund	18,668	6	10	19,118	–	7
Revenue Account	250	7	10	469	5	6
Dividend Account	53,511	4	4	53,236	17	11

2. REVENUE.—ACCOUNT of all SUMS actually Received and Paid during the above Twelve Months, viz., of Assets receivable, and of Liabilities absolutely incurred.

RECEIPT:	£.	s.	d.	£.	s.	d.
Sale of Gas						
Common gas, at 4 s. 6 d. per 1,000 cubic feet	187,411	12	6			
Cannel gas, at 6 s. per 1,000 cubic feet	59,915	2	9			
Public lighting, and under contracts, deducting 4,481 l. 19 s. 9 d. cost of repairing and lighting public lamps	19,994	14	5			
	267,321	9	8			
Less,—Bad debts	1,361	18	3			
				265,959	11	5
Rental of meters				4,509	16	–
Sale of old materials				1,628	19	5
Sale of Residual Products:						
Coke	40,726	3	5			
Breeze	2,440	–	8			
Tar	7,097	5	11			
Ammoniacal liquid	1,589	16	8			
Other waste products	45	–	–			
				51,898	6	8
Miscellaneous Receipts				4,547	7	9
TOTAL RECEIPTS £.				328,544	1	3

EXPENDITURE:	£.	s.	d.	£.	s.	d.
Management:						
Directors' allowances	2,326	16	–			
Salaries	8,268	13	11			
Collectors' commission	3,745	15	10			
Rents, rates, and taxes of offices (included in manufactory)	—					
Stationery, printing, and general charges	4,025	3	3			
Payment to auditors	152	5	–			
				18,518	14	–
Manufacture of Gas:						
Coals, including carriage, dues, &c.	134,135	15	1			
Purifying materials	3,313	3	9			
Supervision and labour	30,926	12	2			
Retorts, tools, and other implements	7,869	19	–			
Ordinary repair, and maintenance of premises	17,313	13	6			
Rents, rates, and taxes of manufactory and offices	10,173	14	9			
				203,732	18	3
Distribution, including Service Mains, Pipes, &c.:						
Ordinary repair and maintenance	7,724	17	6			
Meters:						
Restoring and replacing	5,303	13	10			
Additional	1,246	8	–			
				14,274	19	4
Law and Parliamentary charges				1,586	1	3
On temporary Loan from Bankers				71	16	10
Reserve fund for contingency, wear and tear, or other purposes				590	13	11
Balance, being shareholders' profit				89,768	17	8
TOTAL EXPENDITURE £.				328,544	1	3

3. DIVIDENDS.—ACCOUNTS of all DIVIDENDS actually Paid for the above Twelve Months.

	£.	s.	d.		£.	s.	d.
Balance, being shareholders' profit, as above	89,768	17	8	Dividends on 780,000 l. Capital Stock, at 10 per cent., including back dividend of 3½ per cent. per annum, in respect of the dividend to Midsummer 1860	89,550	–	–
				Balance	218	17	8
£	89,768	17	8	£.	89,768	17	8

CITY OF LONDON GAS LIGHT AND COKE COMPANY.

ANNUAL STATEMENT of Accounts, showing the actual State and Condition of the Concerns of the City of London Gas Light and Coke Company, for the Twelve Months ended the 24th Day of December 1865.

1. CAPITAL.—State of the Accounts at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
		£.	£.	£.	£.
Shares, the City of London Gas Company's Act, 1859 - -	10,000 A.'s	20	20	200,000	
	10,000 B.'s	10	10	100,000	
	8,000 New	10	10	80,000	
					380,000
Borrowed monies under the above Act, Bonds - - - - - - - - - - - - - - -				Rate, 5 *l.* per cent.	57,595
Profits capitalized -					nil.
				Total Capital - - - £.	437,595

BALANCES:

	Christmas 1864. £. s. d.	Christmas 1865. £. s. d.
Reserve Fund - - - - - - -	5,360 10 3	5,360 10 3
Revenue Account - - - - - -	4,190 1 4	6,448 6 6
Dividend Account (unpaid) - - - - -	451 2 7	393 13 7

2. REVENUE.—Account of all Sums actually Received and Paid during the above Twelve Months.

RECEIPT:	£. s. d.	£. s. d.
Balances brought forward:		
Reserve Fund (*see* above).		
Revenue Account - - -	- -	4,190 1 4
Dividend Account (*see* above).		
Sale of Gas:		
Common gas, at 4 *s.* 6 *d.* per 1,000 feet - - - - - -	102,014 2 1	
Cannel gas, at 6 *s.* per 1,000 feet -	6,020 9 4	
Public lighting and under contract	4,332 8 8	
	112,367 - 1	
Less bad debts, bankrupts' estates, &c. - - - - - -	1,036 9 2	
		111,330 10 11
Rental of meters (none charged)		
Sale of old materials - - - -	- -	788 2 3
Sale of Residual Products:		
Coke - - - - - - -	19,495 - 6	
Breeze - - - - - -	1,187 10 -	
Tar - - - - - - -	3,737 1 -	
Ammoniacal liquor - - -	1,348 12 6	
Other waste products - - -	- nil.	
		25,768 4 -
Miscellaneous Receipts - - - - - -		166 3 6
Total Receipts - - - £.		142,243 2 -

EXPENDITURE:	£. s. d.	£. s. d.
Management:		
Directors' allowances - - - -	1,180 15 6	
Salary of secretary and clerks - -	1,623 6 8	
Collectors' commission and pay - -	900 - -	
Stationery, printing, and general charges	1,141 18 5	
Payment to auditors - - - -	109 4 -	
		4,955 4 7
Manufacture of Gas:		
Coals, including carriage, dues, &c. -	46,942 19 7	
Purifying materials - - - -	702 12 6	
Supervision and labour - - - -	18,545 - -	
Tools and other implements - - -	938 9 1	
Ordinary repair and maintenance of premises - - - - - -	9,104 2 11	
Rents, rates, and taxes of manufactory -	2,887 3 3	
Improvement and extension of premises and machinery (out of revenue) - -	nil	
		79,120 7 4
Distribution, including Service Mains, Pipes, &c.:		
Ordinary repairs and maintenance - -	7,679 16 8	
Improvement and extension (out of revenue) - - - - - - -	nil	
Meters:		
Restoring and replacing - - -	2,511 1 9	
Additional (out of revenue) - - -	nil	
		10,190 18 5
Law and Parliamentary charges - - -	- -	92 8 8
Interest: Paid from profits on bonds, 57,595*l.* at 5 *l.* per cent. - - - -	2,770 3 8	
Temporary loans - - - -	65 12 10	
		2,835 16 6
Reserve fund - - - - - - - - - -		- nil
Added to capital - - - - - - - - - -		- nil
Balance for shareholders' profit - - - - - -		45,048 6 6
Total Expenditure - - - £.		142,243 2 -

3. DIVIDENDS.—Account of all Dividends declared out of the Balance of Profit to 24th December 1865.

	£. s. d.		£. s. d.
Balance for shareholders' profit, as above - - -	45,048 6 6	Dividend on 380,000 *l.* at 10 *l.* and 4 *l.* per cent. - - -	32,000 - -
		Arrears of Dividend for year 1860, at 3 *l.* per cent. - -	6,600 - -
		Balance to next year's account - - - - - -	6,448 6 6
£.	45,048 6 6	£.	45,048 6 6

We have examined the above accounts, and certify them to be correct.

Dorset-street, 24 April 1866.

Robt. Alexr. Gray, Chairman.
R. J. Millar, Secretary.

COMMERCIAL GAS COMPANY.

ANNUAL STATEMENT of Accounts, showing the actual State and Condition of the Concerns of the Commercial Gas Company, for the Twelve Months ended the 30th day of June 1865.

1. CAPITAL.—State of the Account at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
Shares:		£.	£.	£.	£. s. d.
Commercial Gas Act 15 & 16 Vict. c. 155	17,476 $\frac{3}{5}$,	25	25	436,915	
	13 $\frac{4}{5}$, $\frac{1}{20}$	25	various	201	
	17,490 $\frac{2}{5}$, $\frac{1}{2}$				437,116 – –
			Rate per Cent.	Amount.	
Borrowed monies			4	– –	500 – –
				Total Capital £.	437,616 – –

2. REVENUE.—Account of all the Sums actually Received and Paid during the above Twelve Months.

RECEIPT:	£. s. d.	£. s. d.
Balances brought forward:		
Reserve Fund, Revenue Account, Dividend Account	– –	44 1 1
Sale of Gas:		
Common gas, at 4 and 4 *s.* per 1,000 feet	111,942 16 9	
Public lighting and under contracts	14,524 10 2	
		126,467 6 11
Sale of Residual Products:		
Coke	19,572 6 2	
Breeze	1,049 18 11	
Tar	3,213 14 1	
Ammoniacal liquid	989 5 8	
		24,825 4 10
Miscellaneous Receipts		1,165 13 4
Total Receipts		152,502 6 2
Total Expenditure		152,502 6 2

EXPENDITURE.	£. s. d.	£. s. d.
Management:		
Directors' allowances	1,500 – –	
Salaries of secretary and clerks	2,689 3 2	
Collectors' commission and pay	1,405 – 3	
Rent, rates, and taxes of offices	100 – –	
Stationery, printing, and general charges	2,234 4 8	
Payment to auditors	150 – –	
		8,078 8 1
Manufacture of Gas:		
Coals, including carriage, dues, &c.	58,733 7 –	
Purifying materials	2,555 12 9	
Supervision and labour	18,247 11 6	
Tools and other implements	347 16 4	
Ordinary repair and maintenance of premises	5,496 17 4	
Rents, rates, and taxes of manufactory	2,761 12 7	
		88,142 17 6
Distribution, including Service Mains, Pipes, &c.:		
Ordinary repair and maintenance	– –	2,453 2 2
Meters:		
Restoring and replacing	– –	769 9 –
Law and Parliamentary charges	49 – 3	
Interest paid from profits on borrowed capital (less sums outstanding)	63 6 6	
		112 6 9
Reserve Fund for contingency, wear and tear, or other purposes		3,590 – 7
Balance for shareholders' profit		49,356 2 1
Total Expenditure £.		152,502 6 2

3. DIVIDENDS.—Account of all Dividends actually Paid in the above Twelve Months.

	£. s. d.	£. s. d.
Balance for shareholders' profit, as above	49,356 2 1	
Dividends on capital stock, at 10 per cent.		40,874 16 3
Arrears dividend		8,481 5 10
£.	49,356 2 1	49,356 2 1

EQUITABLE GAS LIGHT COMPANY.

ANNUAL STATEMENT of Accounts, showing the actual State and Condition of the Concerns of the Equitable Gas Light Company, for the Twelve Months ended the 31st day of December 1865.

1. CAPITAL.—State of the Account at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
		£.	£.	£.	£.
Shares (5 Vict., Sess. 2, c. 36)	4,000	50	50	200,000	
	4,000	25	25	100,000	
					300,000
			Total Capital - - - £.		300,000

2. REVENUE.—Account of all Sums actually Received and Paid during the above Twelve Months.

RECEIPT:	£. s. d.	£. s. d.
Balances brought forward:		
Revenue Account - - -	5,470 1 11	
Dividend Account - - -	185 9 2	
		5,655 11 1
Sale of Gas:		
Common gas, at 4 *s.* 6 *d.* and 4 *s.* per 1,000 feet - - - -	62,971 18 7	
Cannel gas, at 6 *s.* and 5 *s.* 6 *d.* per 1,000 feet - - - - -	7,476 6 8	
Public lighting and under contracts	6,413 2 10	
		76,861 8 1
Rental of meters - - - - -	- -	1,551 7 1
Sale of old materials - - - -	- -	143 4 2
Sale of Residual Products:		
Coke - - - - - - -	11,386 17 1	
Breeze - - - - - -	761 - 7	
Tar - - - - - - -	2,297 14 8	
Ammoniacal liquid - - -	627 12 6	
		15,073 4 10
Miscellaneous receipts - - - - - -		303 17 3
Total Receipts - - -		99,588 12 6
Total Expenditure - -		93,644 16 7
Balance to Revenue next year - - - £.		5,943 15 11

EXPENDITURE:	£. s. d.	£. s. d.
Management:		
Directors' allowances - - - -	1,300 - -	
Salary of secretary and clerks - -	1,765 6 8	
Collectors' commission and pay - -	991 10 7	
Rent, rates, and taxes of offices - -	138 12 4	
Stationery, printing, and general charges -	700 12 1	
Payment to auditors - - - -	90 - -	
		4,986 1 8
Manufacture of Gas:		
Coals, including carriage, dues, &c. -	28,607 14 7	
Purifying materials - - - -	412 16 -	
Supervision and labour - - - -	7,048 7 -	
Tools and other implements - - -	26 14 9	
Ordinary repair and maintenance - -	4,416 4 11	
Rent of premises, rates, and taxes of manufactory - - - - - -	1,439 13 -	
		41,951 10 3
Distribution, including Service Mains, Pipes, &c.:		
Ordinary repair and maintenance - -	3,453 14 6	
Meters:		
Restoring and replacing - - -	642 18 7	
		4,096 13 1
Law and Parliamentary charges - - - - - -		106 13 6
Interest paid from profits on borrowed capital, at 5 per cent. (less sums outstanding) - - - - - - -		49 5 10
Balance for shareholders' profit - - - - - -		42,454 12 3
Total Expenditure - - - £.		93,644 16 7

3. DIVIDENDS.—Account of all Dividends actually Paid in the above Twelve Months.

	£. s. d.		£. s. d.
Balance for shareholders' profit, as above - - - -	42,454 12 3	Dividends on 284,000 *l.* capital stock, at 17 and 10 per cent. (less sums remaining outstanding) - - -	42,386 16 6
		Balance to next year's account - - - - - -	67 15 9
£.	42,454 12 3	£.	42,454 12 3

GREAT CENTRAL GAS CONSUMERS' COMPANY.

ANNUAL STATEMENT of Accounts, showing the actual State and Condition of the Concerns of the Great Central Gas Consumers' Company, for the Twelve Months ended the 31st day of December 1865.

1. CAPITAL.—State of the Account at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
		£.		£.	£.
Shares (14 & 15 Vict. c. 69, 185) -	20,000	10	All - -	200,000	200,000
			Rate per Cent.	Amount.	
				£.	
Borrowed monies - - - - - - - - - - -			5	66,000	66,000
Profits capitalised - - - - - - - - - - - - - - - - - -					None.
				Total Capital - - - £.	266,000

2. REVENUE.—Account during the above Twelve Months.

INCOME:	£. s. d.	£. s. d.	EXPENDITURE:	£. s. d.	£. s. d.
Balances brought forward:			Management:		
Reserve fund - - - - -	627 4 1		Directors' allowances - - - -	1,500 - -	
Revenue Account - - -	527 11 5		Salary of secretary and clerks - -	1,374 - -	
Dividend Account - - -	17,017 4 -		Collectors' commission and pay - -	899 10 2	
		18,171 19 6	Rent, rates, and taxes of offices - -	323 2 6	
Sale of Gas:			General charges, including stationery and printing - - - - -	1,581 17 11	
Common gas, at 4 *s.* 6 *d.* per 1,000 feet - - - - - -	72,325 19 -		Payment to auditors - - - -	75 2 6	
Public lighting and under contracts - - - - - -	9,738 16 11				5,759 13 1
		82,064 15 11	Manufacture of Gas:		
Sale of Residual Products:			Coals, including carriage, dues, &c. -	36,555 - 9	
Coke and breeze - - - -	19,346 11 4		Purifying materials - - - -	617 2 3	
Tar and ammoniacal liquid - -	4,977 - 10		Supervision and labour - - -	11,913 6 -	
		24,323 12 2	Stores, tools, implements, and ordinary repair, and maintenance of premises -	2,970 11 -	
Miscellaneous receipts - - - - - -		218 1 4	Rents, rates, and taxes of manufactory -	1,398 3 2	
Total Income - - - -		124,778 8 11			53,454 3 2
Total Expenditure - - -		122,644 17 5	Distribution, including service mains, pipes, and ordinary repair and maintenance - - - - - -	6,383 19 7	
Balance to Revenue next year - - £.		2,133 11 6	Meters:		
			Restoring and replacing - - -	869 13 7	
					7,253 13 2
			Law and Parliamentary charges - - -	282 9 6	
			Interest paid from profits, on £. 66,000 borrowed capital, at 5 per cent. - -	3,300 - -	
			Wood-street fire, fifth instalment - -	4,750 - -	
			Arbitrators' award, final instalment - -	517 10 6	
					8,850 - -
			Balance for shareholders' profit - - - - - -		47,333 8 -
			Total Expenditure - - - £.		122,644 17 5

3. DIVIDENDS.—Account of all Dividends actually Paid in the above Twelve Months.

	£. s. d.		£. s. d.
Balance for shareholders' profit, as above - - -	47,333 8 -	Dividends declared April and October - - - -	37,333 8 -
		Balance to next year's account - - - - -	10,000 - -
£.	47,333 8 -	£.	47,333 8 -

We have examined the above accounts, and certify them to be correct.

Thomas Dakin, Chairman.
R. M. Massey, Secretary.

IMPERIAL GAS LIGHT AND COKE COMPANY

ANNUAL STATEMENT of Accounts, showing the actual State and Condition of the Concerns of the Imperial Gas Light and Coke Company, for the Twelve Months ended the 31st day of December 1865.

1. CAPITAL.—State of the Account at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
Shares raised—		£.	£.	£.	£.
Under 1 & 2 Geo. 4, c. 117; 4 Geo. 4, c. 95; and 10 Geo. 4, c. 12	13,000	50	50	650,000	
Under 17 Vict. c. 55 (Act of Company's re-incorporation)	13,000	50	50	650,000	
					1,300,000 – –
			Rate per Cent.	Amount.	
				£.	
Borrowed monies under the authority of the above-mentioned Acts			4	14,800	
			4½	40,000	
			5	218,200	
					273,000 – –
Proprietors' 10 per cent. Bonds authorised by 17 Vic. c. 55					130,000 – –
				Total Capital £.	1,703,000 – –

2. REVENUE.—Account of all Income and Expenditure during the above Twelve Months.

Income:	£. s. d.	£. s. d.	Expenditure:	£. s. d.	£. s. d.
Sale of Gas:			Management:		
			Directors' allowances	2,500 – –	
			Salary of secretary and clerks	8,861 19 6	
			Collectors' commission and pay	7,570 6 9	
			Rent, rates, and taxes of offices	282 14 6	
			Stationery, printing, and general charges	1,668 19 6	
			Payment to auditors	157 10 –	
Common gas at maximum of 4s. 6d. per 1,000 feet to 30th June and 4 s. from ditto	404,793 12 4				21,041 10 3
			Manufacture of Gas:		
			Coals, including carriage, dues, &c.	216,937 13 3	
			Oil, tallow, stokers' gloves, cartage, &c.	3,060 – 7	
			Purifying materials	4,295 3 3	
			Supervision and labour	49,114 4 5	
Public lighting and under contracts	66,037 4 –		Tools and other implements, repaired and replaced	49,834 1 4	
			Ordinary repair and maintenance of premises		
			Stationery, printing, and general charges	1,600 – –	
			Rents, rates, and taxes of manufactory	6,132 16 11	
		470,830 16 4			330,973 19 9
Rental of meters	– –	7,569 11 –	Distribution, including Service Mains, Pipes, &c.:		
			Supervision and labour	17,461 19 9	
			Rent, rates, and taxes	4,033 2 5	
			Ordinary repair and maintenance	11,038 9 3	
			Compensation for damages	892 10 –	
			Stationery, printing, and general charges	1,668 19 4	
			Meters,—restoring and replacing	4,163 1 11	
Sale of old materials	– –	1,456 9 7			39,258 2 8
Sale of Residual Products:			Law and Parliamentary charges		3,001 3 11
			Interest paid from profits on 273,000 *l.*, borrowed capital, at 4 to 5 per cent.	7,176 15 9	
			Ditto on Proprietors' 10 per cent. Bonds	13,000 – –	
Coke	77,143 9 7				20,176 15 9
Breeze	4,848 18 6		Bad debts		3,099 13 8
Tar	10,369 9 10		Contingency and reserve funds		27,770 16 6
Ammoniacal liquid	2,227 11 4		Dividend account for shareholders' profit		130,000 – –
		94,589 9 3			
Miscellaneous receipts		875 16 4			
Total £.		575,322 2 6	Total £.		575,322 2 6

3. DIVIDENDS.—Account of all Dividends actually paid in the above Twelve Months.

	£. s. d.		£. s. d.
Balance brought forward	61,750 – –	Dividends to 30th June 1865 on 1,267,500 *l.*, capital stock, at 10 per cent.	126,750 – –
Revenue account for shareholders' profit, as above	130,000 – –	Balance to next year's account	65,000 – –
£.	191,750 – –	£.	191,750 – –

4. CONTINGENCY AND RESERVE FUNDS.

	£. s. d.		£. s. d.
Balance brought forward	90,267 4 7	Balance to next year's account on Contingency Fund	35,925 8 2
Revenue account, as above	27,770 16 6	,, ,, Reserve Fund	83,834 19 6
Interest, Dividends on Consols	1,722 6 7		
£.	119,760 7 8	£.	119,760 7 8

We have examined the above accounts, and certify them to be correct.

E. V. Richards, Chairman.
Harry Chubb, Secretary.

INDEPENDE NT GAS LIGHT AND COKE COMPANY.

ANNUAL ST ATEMENT of Accounts, showing the Actual State and Condition of the Concerns of the Independent Gas-Light and Coke Company, for the Twelve Months ended the 31st day of December 1865.

1. CAPITAL.—State of the Account at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
		£.	£.	£.	£.
Capital raised under 10 Geo. 4, c. 118 - -	3,000	40	40	120,000	
Ditto - - under the 27 & 28 Vict. c. 162	3,000	20	10	30,000	
Profits capitalised under 27 & 28 Vict. c. 162	3,000	10	10	30,000	180,000
Borrowed monies - - - - -	- -	- -	- -	- -	17,500
				Total Capital - - - £.	197,500

Balances.

	£. s. d.
Reserve Fund - - - - - - - - - -	18,000 - -
Revenue Account - - - - - - - - -	13,368 12 11

2. REVENUE.—Account of all Sums actually Received and Paid during the above Twelve Months, viz.:—of Assets receivable, and of Liabilities absolutely incurred.

RECEIPT.	£. s. d.	£. s. d.	EXPENDITURE:	£. s. d.	£. s. d.
Balance brought forward - - -	- -	10,923 13 3	Management:		
			Directors' allowances - - - -	1,700 - -	
			Salaries of secretary and clerks - -	1,348 15 -	
Sale of Gas:			Collectors' commission and pay - -	1,242 8 8	
			Rent, rates, and taxes (not separated) -	1,662 9 9	
Common gas, at 4 s., 3 s. 9 d., and 3 s. 4 d. per 1,000 ft. - -	59,114 13 5		Stationery, printing, and general charges	1,237 19 -	
			Payments to auditors - - - -	100 - -	
					7,291 12 5
Public lamps and other contracts -	5,730 5 1		Manufacture of Gas:		
		64,844 18 6	Coals, including carriage, dues, &c. -	36,366 5 5	
			Purifying materials - - - -	514 12 5	
Rental of meters - - - -	- -	2,084 19 1	Supervision and labour, and salaries of engineer and superintendents - -	13,622 13 5	
Sale of old materials - - - -	- -	478 17 10	Tools and other implements, and ordinary repair, and maintenance of premises -	7,399 15 8	
			Improvement and extension of premises and machinery (out of revenue) -	—	
Sale of Residual Products:					57,903 6 11
Coke - - - - - -	13,726 1 9		Distribution, including Service Pipes, Mains, &c.:		
Breeze - - - - - -	756 5 3		Ordinary repair and maintenance of the above - - - - - -	- -	1,535 - 8
Tar - - - - - - -	3,280 7 10		Improvement and extension (out of revenue) - - - - - -	—	
Ammonia - - - - -	600 17 1		Meters:		
Other waste products - - -	—		Restoring and replacing - - -	- -	1,488 7 1
		18,363 11 11			
Miscellaneous receipts - - -	- -	1,066 3 6	Bad Debts and Allowances - - -	- -	568 3 -
			Law and Parliamentary Charges - -	- -	125 6 6
			Interest on Loans - - - - - -	- -	1,146 7 7
			Balance, being Shareholders' Profit - -	- -	27,703 19 11
Total Receipts - - - £.		97,762 4 1	Total Expenditure - - - £.		97,762 4 1

3. DIVIDENDS.—Account of all Dividends actually Paid in the above Twelve Months.

	£. s. d.		£. s. d.
Balance, being shareholders' profit, as above - - -	27,703 19 11	Dividends on 120,000 l. capital stock, at 10 per cent. per annum - - - - - - - - - -	12,000 - -
		Dividends on 30,000 l. capitalised profits at 5 per cent. per annum - - - - - - - - -	1,500 - -
		Dividends on l. new shares at 7½ per cent. per annum	835 7 -
		Balance - - - - - - - - - -	13,368 12 11
£.	27,703 19 11	£.	27,703 19 11

LONDON GAS LIGHT COMPANY.

ANNUAL STATEMENT of Accounts, showing the Actual State and Condition of the Concerns of the London Gas Light Company, for the Twelve Months ended the 31st day of December 1865.

1. CAPITAL.—State of the Account at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
Shares—		£.	£.	£.	£.
The London Gas Light Act, 1852 - - - - - -	7,840	50	All, except 2,934	389,066	
	5,608	25	25	140,200	
					529,266
			Rate per Cent.	Amount.	
				£.	
Borrowed monies - - - - - - - - - - - -			4½ to 5.	130,155	
					130,155
Profits capitalised, "Stock," London Gas Light Act, 1857 - - - - - - - - - -					30,385
				Total Capital - - - £.	689,806

2. REVENUE.—Account of all the Sums actually Received and Paid during the above Twelve Months.

RECEIPT:	£. s. d.	£. s. d.	EXPENDITURE:	£. s. d.	£. s. d.
Balances brought forward:			Management:		
Revenue account - - -	10,667 - 6		Directors' allowances - - - -	1,468 15 -	
Dividend account - - -	1,783 17 4		Salaries of secretary and clerks - -	3,602 - -	
		12,450 17 10	Collectors' commission and pay - -	2,130 5 7	
Sale of Gas:			Rent, rates, and taxes of offices - -	469 3 4	
Common gas, at 4 *s.*, 4 *s.* 6 *d.*, and 5 *s.* per 1,000 feet - - -	126,135 13 -		Stationery, printing, and general charges	4,692 5 4	
Cannel gas, at 6 *s.* per 1,000 feet -	7,442 17 5		Payment to auditors - - - -	97 18 3	
Public lighting, and under contracts - - - - - -	18,920 - 1				12,460 7 6
		152,498 10 6	Manufacture of Gas:		
Rental of meters - - - -	- -	2,316 - -	Coals, including carriage, dues, &c. -	68,262 8 3	
Sale of old materials - - - -	- -	2,748 6 1	Purifying materials - - - -	174 17 6	
			Supervision and labour - - -	21,410 1 -	
Sale of Residual Products:			Tools and other implements - - -	629 10 8	
Coke - - - - - -	32,416 3 3		Ordinary repair and maintenance of premises - - - - - - -	56,197 13 2	
Breeze - - - - - -	2,607 16 8		Rents, rates, and taxes of manufactory -	5,947 14 9	
Tar - - - - - -	5,958 - 6				152,622 5 4
Ammoniacal liquid - - -	77 10 -		Distribution, including Service Mains, Pipes, &c.:		
Other waste products - - -	23 17 6		Ordinary repair and maintenance - -	17,257 8 7	
		41,083 7 11			
Miscellaneous receipts - - -	- -	17 2 6	Meters:		
			Restoring and replacing - - -	3,485 14 8	
			Additional - - - - - -	2,796 17 -	
					23,540 - 3
			Law and Parliamentary charges - - -	338 16 10	
			Interest paid from profits on 130,155 *l.* borrowed capital, and liabilities, at 4½ to 5 per cent. (less sums outstanding) - - -	5,625 5 1	
					5,964 1 11
Total Receipts - - - - -		211,114 4 10	Redemption Fund, London Gas Act - -	- -	224 15 -
			Balance for shareholders' profit - - -	47,130 19 6	
Total Expenditure - - -		239,892 5 3	Less unpaid - - - - - -	2,050 4 3	
					45,080 15 3
Balance to be charged to Revenue next year - £.		28,778 - 5	Total Expenditure - - - £.		239,892 5 3

3. DIVIDENDS.—Account of all Dividends actually Paid in the above Twelve Months.

	£. s. d.		£. s. d.
Balance for shareholders' profit, as above - - -	47,130 19 6	Dividends on 558,085 *l.* 10 *s.* capital stock, at 5, 6, and 10 per cent. (less sums remaining outstanding) - - -	45,080 15 3
		Balance to next year's account - - - - - -	2,050 4 3
£.	47,130 19 6	£.	47,130 19 6

We have examined the above accounts, and certify them to be correct, as far as the form will admit.

D Sprague, Chairman.
J. R. Hinde, Secretary.

PHŒNIX GAS LIGHT AND COKE COMPANY.

ANNUAL STATEMENT of Accounts, showing the Actual State and Condition of the Concerns of the Phœnix Gas Light and Coke Company, for the Twelve Months ended the 25th day of December 1865.

1. CAPITAL.—State of the Account at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital to be Raised.
		£.	£.	£.	£.
Capital raised under 5 Geo. 4, c. 78, dividend limited, under General Gas Act	27,000	20	all	540,000	540,000
Capital raised under 27 & 28 Vict. c. 159, dividend limited, to 7½ per cent. per annum	Stock	15%	34,000	54,000	360,000
Profits capitalised, dividend limited, to 5 per cent. per annum	-	-	-	144,000	200,000
Borrowed monies on bonds, 27 & 28 Vict. c. 159	-	-	-	114,836	144,000
			Total Capital £.	852,836	1,244,000

Balances brought forward.

	1864.	1865.
	£. s. d.	£. s. d.
Reserve Fund against Leaseholds	7,285 – 6	8,444 10 3
Revenue Account, balance of Profit and Loss	8,290 12 6	10,758 1 11
Dividend Account uncalled for	220 4 10	119 4 3

2. REVENUE.—Account of all Sums actually Received and Paid during the above Twelve Months, viz.:—of Assets receivable, and of Liabilities absolutely incurred.

RECEIPT:	£. s. d.	£. s. d.
Sale of Gas:		
Common gas, at 4s. per 1,000 feet	120,785 11 4	
„ at 4s. 3d. „	24,725 – 11	
Public lamps and other contracts	20,353 10 2	
		165,864 2 5
Rental of meters (none charged)	nil.	
Sale of Residual Products:		
Coke	38,448 8 4	
Breeze	1,286 1 5	
Tar	5,848 19 6	
Ammonia	3,049 8 –	
		48,632 17 3
Miscellaneous receipts		532 10 6
Interest received		824 3 5
Total Receipts £.		215,853 13 7

EXPENDITURE:	£. s. d.	£. s. d.
Management:		
Directors' allowances	2,000 – –	
Salaries of secretary and clerks	2,567 7 5	
Collectors' commission and pay	2,361 18 7	
Stationery, printing, and general charges	2,127 14 9	
Payments to auditors	100 – –	
		9,157 – 9
Manufacture of Gas:		
Coals, including carriage, dues, &c.	74,018 12 8	
Purifying materials	2,132 15 –	
Supervision and labour	17,273 11 6	
Salaries of engineer and superintendents	2,151 – –	
Tools and other implements	5,664 5 8	
Ordinary repair and maintenance of premises	7,724 – 10	
Rent, rates, and taxes of manufactory	3,050 6 –	
Improvement and extension of premises and machinery (out of revenue)	nil.	
		112,014 11 8
Distribution, including Service Pipes, Mains, &c.:		
Ordinary repair and maintenance of the above	8,622 1 10	
Rates on mains and pipes	1,308 – 1	
Salaries of inspectors	1,997 4 10	
Wages of lamplighters	3,392 9 7	
Improvement and extension (out of revenue)	nil.	
		15,319 16 4
Meters:		
Restoring and replacing		3,130 8 6
Additional (out of revenue)	nil.	
Bad debts and allowances		770 11 8
Law and Parliamentary charges		5,179 2 4
Interest on bonds		3,689 12 11
Balance, being shareholders' profit		66,592 9 5
Total Expenditure £.		215,853 13 7

3. DIVIDENDS.—Account of all Dividends actually Paid in the above Twelve Months.

	£. s. d.		£. s. d.
Balance, being shareholders' profit, as above	66,592 9 5	Dividends on 540,000 l.; 27,000, shares, at 20 l. per share, at 10 per cent. per annum	64,125 – –
Balance at Christmas 1864	8,290 12 6	Dividends on 144,000 l. stock, at 5 per cent. per annum	
		„ „ 54,000 l. stock, at 7½ „ „	
		Balance	10,758 1 11
£.	74,883 1 11	£.	74,883 1 11

RATCLIFF GAS LIGHT AND COKE COMPANY.

ANNUAL STATEMENT of Accounts, showing the Actual State and Condition of the Concerns of the Ratcliff Gas Light and Coke Company, for the Twelve Months ended the 31st day of December 1865.

1. CAPITAL.—State of the Account at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
		£.	£.	£.	£. s. d.
Shares—4 Geo. 4, c. 98—The Ratcliff Gas Act, 1855 - - -	5,000	20	20	100,000	100,000 - -
			Rate per Cent.	Amount.	
			£.	£. s. d.	
Borrowed monies - - - -	- -	- -	5 (About).	5,448 6 8	5,448 6 8
			Total Capital - - - £.		105,448 6 8

2. REVENUE.—Account of all Sums actually Received and Paid during the above Twelve Months, including Assets and Liabilities.

RECEIPT:	£. s. d.	£. s. d.
Balances brought forward:		
Revenue account - - -	1,184 5 1	
Sale of Gas:		
Common gas, at 4 *s.* 6*d.* per 1,000 feet - - - - - -	27,887 8 9	
Public lighting and under contracts	4,123 - 11	
	32,010 9 8	
Less bad debts and allowances - -	124 11 5	31,885 18 3
Rental of meters - - - -	- -	10 - 10
Sale of old materials - - - -	- -	175 13 9
Sale of Residual Products:		
Coke - - - - - -	7,025 4 -	
Breeze - - - - - -	342 13 1	
Tar - - - - - -	1,034 19 7	
Ammoniacal liquid - - -	194 5 -	8,597 1 8
Miscellaneous Receipts - - -		182 13 7
Total Receipts - - - - £.		40,851 8 1
Total Expenditure - - £.		40,673 15 9
Balance to Revenue next Year - - £.		177 12 4

EXPENDITURE:	£. s. d.	£. s. d.
Management:		
Directors' allowances - - - -	800 - -	
Salary of secretary and clerks - -	774 - -	
Collectors' commission and pay - -	311 12 -	
Rent, rates, and taxes of offices [estimated] - - - - - -	81 6 8	
Stationery, printing, and general charges	439 1 11	
Payment to auditors - - - -	31 10 -	2,437 10 7
Manufacture of Gas:		
Coals, including carriage, dues, &c. -	16,331 17 5	
Purifying materials - - - -	549 18 3	
Supervision and labour - - - -	6,411 18 9	
Tools and other implements - - -	249 15 9	
Ordinary repair and maintenance of premises - - - - - -	1,942 11 9	
Rents, rates, and taxes of manufactory -	859 1 9	26,345 3 8
Distribution, including Service Mains, Pipes, &c.:		
Ordinary repair and maintenance - -	166 8 6	
Meters:		
Restoring and replacing - - -	5 17 -	172 5 6
Law and Parliamentary charges - - - - - -		59 16 2
Interests paid from profits on borrowed capital - - -		258 19 10
Shareholders' profit or dividend - - - - - -		11,400 - -
Total Expenditure - - - £.		40,673 15 9

3. DIVIDENDS.—Account of all Dividends actually paid in respect of the above Twelve Months.

	£. s. d.		£. s. d.
Shareholders' profit, as above - - - - -	11,400 - -	Dividends on 100,000 *l.* capital stock, at 10 *l.* per cent. per annum - - - - - - - - - -	10,000 - -
		Dividend arrears, 1860 - - - - - - -	1,400 - -
£.	11,400 - -	£.	11,400 - -

SOUTH METROPOLITAN GAS LIGHT AND COKE COMPANY.

ANNUAL STATEMENT of Accounts, showing the Actual State and Condition of the Concerns of the South Metropolitan Gas Light and Coke Company, for the Twelve Months ended the 31st day of December 1865.

1. CAPITAL.—State of the Account at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
		£.	£.	£.	£.
Shares—5 Vict. c. 79	4,000	50	50	200,000	200,000
Borrowed monies					nil.
				Total Capital £.	200,000

2. REVENUE.—Account of all Sums actually Received and Paid, including all Claims and Liabilities, for and on account of the above Twelve Months.

RECEIPTS:	£. s. d.	£. s. d.	EXPENDITURE:	£. s. d.	£. s. d.
Balances brought forward:			Management:		
Reserve Fund	20,000 – –		Directors' allowances	1,200 – –	
Revenue Account	6,434 7 9		Salary of secretary and clerks	2,176 3 –	
Dividend Account	126 19 –		Collectors' commission and pay	915 8 7	
		26,561 6 9	Rent, rates, and taxes of offices	869 9 8	
Sale of Gas:			Stationery and printing	321 8 7	
Common gas, at 3 s. 8 d. to 30 June 1865, and then 3 s. 4 d. per 1,000 feet	57,096 11 8		General charges	1,287 17 2	
Public lighting and under contracts	7,979 17 10		Payment to auditors	100 – –	
		65,076 9 6			6,870 7 –
Sale of old materials		170 7 9	Manufacture of Gas:		
Sale of Residual Products:			Coals, including carriage, dues, &c.	36,867 3 8	
Coke	18,537 15 3		Purifying materials and labour	576 14 11	
Breeze	744 19 9		Supervision and labour	7,907 2 8	
Tar	2,229 12 8		Tools and other implements, including repair and maintenance of retorts, &c.	2,736 5 1	
Ammoniacal liquid	893 12 9				48,087 6 4
Other waste products	—		Ordinary repair and maintenance of premises		880 19 5
		22,406 – 5	Rents, rates, and taxes of manufactory		1,024 6 10
Miscellaneous Receipts		2,319 10 8	Supervision and labour for general purposes		3,774 1 7
			Distribution, including Main Pipes and Service Pipes:		
			Ordinary repair and maintenance	2,659 14 5	
			Inspectors, lamplighters, rates on mains, &c.	3,132 17 –	
			Meters:		
			Restoring and replacing	2,300 – 2	
			Additional	651 5 1	
					8,743 16 8
			Law and Parliamentary charges		591 2 –
			Bad debts and allowances		350 12 2
			Reserve Fund for contingency, wear and tear, or other purposes, as per contra	20,000 – –	
			Revenue account and dividend account, as per contra	6,561 6 9	
					26,561 6 9
			Balance for shareholders' profit		19,649 16 4
Total Receipts £.		116,533 15 1	Total Expenditure £.		116,533 15 1

3. DIVIDENDS.—Account of all Dividends actually Paid in the above Twelve Months.

	£. s. d.		£. s. d.
Balance for Shareholders' profit, as above	19,649 16 4	Dividends on 200,000 l. capital stock, at 10 per cent. including the payment of the 126 l. 19 s. outstanding, as above	20,126 19 –
Revenue—Dividend Account, as above	6,561 6 9	Balance to next year's account	6,084 4 1
£.	26,211 3 1	£.	26,211 3 1

We have examined the above accounts, and certify them to be correct.

Thos. B. Simpson, Chairman.
Thomas Livesey, Secretary.

SURREY CONSUMERS' GAS COMPANY.

ANNUAL STATEMENT of Accounts, showing the Actual State and Condition of the Concerns of the Surrey Consumers' Gas Company, for the Twelve Months ended the 31st December 1865.

1. CAPITAL.—State of the Account at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
		£.	£.	£.	£.
Shares—					
Under 17 & 18 Vict. c. 94	15,000	10	10	150,000	
Under 26 Vict. c. 37	10,000	10	4	39,982	
					189,982
			Rate per Cent.	Amount.	
Borrowed monies under the authority of the above-mentioned Acts			5	£. 35,000	35,000
Amount received in anticipation of calls					4,063
				Total Capital £.	229,045

2. REVENUE.—Account of all Sums Received and Paid, including Assets and Liabilities, during the above Twelve Months

RECEIPT.	£. s. d.	£. s. d.	EXPENDITURE:	£. s. d.	£. s. d.
Balance brought forward, Revenue Account	— —	1,583 5 7	Management:		
			Directors' allowances	1,500 — —	
			Salaries of secretary and clerks	942 14 —	
			Collectors' commission and pay	756 18 —	
Sale of Gas:			Stationery, printing, and general charges	759 1 1	
			Payment to auditors	63 — —	
					4,021 13 1
Common gas, at 4 *s.* 6 *d.* per 1,000 cubic feet, less discount, varying with amount of consumption	47,670 7 7		Manufacture of Gas:		
			Coals, including carriage, dues, &c.	26,112 1 1	
			Purifying materials	928 8 —	
Public lighting and under contracts	12,887 17 7		Supervision and labour	9,435 10 8	
		60,558 5 2	Tools and other implements	288 7 1	
			Ordinary repair and maintenance of plant and premises	2,239 17 6	
					39,004 4 4
Sale of old materials	—	—	Distribution, including Service Mains, Pipes, &c.:		
Sale of Residual Products:			Ordinary repair and maintenance	1,502 10 3	
Coke	10,191 10 3		Meters:		
Breeze	470 19 —		Restoring and replacing	267 14 6	
Tar	2,132 18 7		Additional	257 19 5	
					2,028 4 2
Sulphate of ammonia	—				
Ammoniacal liquor	198 17 5	12,994 5 3	Rents, rates, and taxes		1,822 7 —
			Bad debts, and allowances		2,281 7 —
			Law charges		193 5 4
			Interest paid from profits on borrowed capital, at 5 per cent. per annum		1,818 18 8
Miscellaneous receipts	— —	69 7 9	Balance, for shareholders' profit		24,035 4 2
Total Receipts £.		75,205 3 9	Total Expenditure £.		75,205 3 9

3. DIVIDENDS.—Account of all Dividends actually Paid in the above Twelve Months.

	£. s. d.		£. s. d.
Balance, for shareholders' profit, as above	24,035 4 2	Dividends on 189,982 *l.* capital stock, at 10 per cent.	18,999 — —
		Arrears of dividends	3,000 — —
		Balance to next year's account	2,036 4 2
£.	24,035 4 2	£.	24,035 4 2

We have examined the above accounts, and certify them to be correct.

London, Rotherhithe, S.E.

WESTERN GAS LIGHT COMPANY (LIMITED).

ANNUAL STATEMENT of Accounts, showing the Actual State and Condition of the Concerns of the Western Gas Light Company (Limited), for the Twelve Months ended the 30th day of June 1865.

1. CAPITAL.—State of the Accounts at the end of the above Twelve Months.

Statute or Authority under which raised.	Number of Shares.	Amount per Share.	Paid up per Share.	Total Paid up.	Total Capital.
Shares:		£.	£.	£.	£.
Joint Stock Companies Act and the Regulations of the Company	20,000	10	10	200,000	
	10,000	10	5	50,000	
	10,000	10	2	20,000	
	Received on account of 1 *l.* call, due 1st July 1865, on class C shares			4,025	
					274,025

	Rate per Cent.	Amount.	
	£.	£.	
Borrowed monies	4½	21,360	
	4¾	10,000	
	5	17,100	
			48,460
Profits capitalised			nil.
		Total Capital £.	322,485

2. REVENUE.—Account for the above Twelve Months.

RECEIPT:	£. s. d.	£. s. d.
Balance brought forward:		
Reserve Fund	39 – 4	
Revenue	—	645 8 6
Sale of Gas:		
Cannel gas, at 6 *s.* and 5 *s.* 6 *d.* per 1,000 feet – £. 80,243 6 9		
Less bad debts – 388 3 6	79,855 3 3	
Public lighting and under contracts 11,554 14 1		
Less lamplighting and repairs – 1,757 5 1	9,797 9 –	
		89,652 12 3
Rental of meters	– –	2,427 10 8
Sale of old materials	– –	84 12 –
Residual Products:		
Coke	4,966 3 3	
Breeze	1,852 9 7	
Tar	2,743 – 4	
Ammoniacal liquor	11 5 –	
		9,572 18 2
Other waste products	—	—
Miscellaneous receipts	—	—
Total Receipts		102,383 1 7
Expenditure		102,106 – 11
Balance to Revenue next Year £.		277 – 8

EXPENDITURE:	£. s. d.	£. s. d.
Management:		
Directors' allowances	1,250 – –	
Salary of secretary, clerks, and office-keeper	2,056 19 6	
Collectors' commission and pay	1,101 9 5	
Rent, rates, and taxes of offices	302 17 1	
Stationery, printing, and general charges	2,048 12 2	
Payment to auditors	80 – –	
		6,839 18
Manufacture of Gas:		
Coals, including carriage, dues, &c.	38,077 10 6	
Supervision and labour	8,040 6 7	
Purifying materials	249 14 8	
Water, oil, tallow, stokers' gloves, cartage, &c.	945 18 10	
Tools and other implements	318 19 11	
Ordinary repair and maintenance of premises	3,581 6 1	
Rents, rates, and taxes of manufactory, &c.	883 5 2	
		52,097 1
Distribution, including Service Mains, Pipes, &c.:		
Ordinary repair and maintenance	694 1 11	
Meters:		
Restoring and replacing	582 17 1	
Salaries of inspectors, surveyor, &c.	1,324 5 –	
		2,601 4
Interest paid from profit, on borrowed capital, at 4½, 4¾, and 5 per cent.	2,003 – –	
On payments in anticipation of calls at 4½ per cent., and on temporary loans	353 10 11	
		2,356 10 1
Law costs		121 9
Leasehold redemption fund		27 6
Shareholders' profit		38,062 10
Total Expenditure £.		102,106 – 1

3. DIVIDENDS.—Account of all Dividends for the above Twelve Months.

	£. s. d.		£. s.
Shareholders' profit, as above	38,062 10 –	Dividends on 260,000 *l.* and 270,000 *l.* capital stock, at 10 per cent.	26,500 –
		Arrears in full	11,562 10
£.	38,062 10 –	£.	38,062 10

We have examined the above accounts, and certify them to be correct.

London, September 1865.

F. W. Russell, Chairman.
S. Barber, Secretary.

RETURN showing the Price per 1,000 Cubic Feet of GAS charged (without Special Arrangement) by each of the GAS COMPANIES to PRIVATE CONSUMERS for the last Two Years, and where any Reduction has taken place within that Period, the Time from which the Reduction has taken place.

NAME OF COMPANY.	COMMON GAS.								CANNEL GAS.								OBSERVATIONS.
	1864.				1865.				1864.				1865.				
	Lady-day.	Midsummer.	Michaelmas.	Christmas.	Lady-day.	Midsummer.	Michaelmas.	Christmas.	Lady-day.	Midsummer.	Michaelmas.	Christmas.	Lady-day.	Midsummer.	Michaelmas.	Christmas.	
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	
1. Chartered Gas Company	4 6	4 6	4 6	4 6	4 6	4 6	4 6	4 6	6 –	6 –	6 –	6 –	6 –	6 –	6 –	6 –	Reduced to 4 *s.* & 5 *s.* 6 *d.* at Christmas, 1865.
2. City of London Gas Light Company	4 6	4 6	4 6	4 6	4 6	4 6	4 6	4 6	6 –	6 –	6 –	6 –	6 –	6 –	6 –	6 –	Ditto - - ditto.
3. Commercial Gas Company	4 5	4 5	4 5	4 5	4 5	4 –	4 –	4 –	None supplied.								
4. Equitable Gas Light Company	4 6	4 6	4 6	4 6	4 6	4 6	4 –	4 –	6 –	6 –	6 –	6 –	6 –	6 –	5 6	5 –	
5. Great Central Gas Consumers Company	4 6	4 6	4 6	4 6	4 6	4 6	4 6	4 6	None supplied.			–	–	–	–	–	Reduced to 4 *s.* at Christmas, 1865.
6. Imperial Gas Light Company	4 6	4 6	4 6	4 6	4 6	4 6	4 –	4 –	None supplied.								
7. Independent Gas Light and Coke Company	4 –	4 –	4 –	4 –	4 –	3 9	3 9	3 4	None supplied.								
8. London Gas Light Company	4 6	4 6	4 6	4 6	4 6	4 6	4 6	4 6	6 –	6 –	6 –	6 –	6 –	6 –	6 –	6 –	Reduced to 4 *s.* & 5 *s.* 6 *d.* at Christmas, 1865.
„ „ „	5 –	5 –	5 –	5 –	5 –	5 –	5 –	5 –	–	–	–	–	–	–	–	–	Charged to the outlying districts only, reduced to 4 *s.* 6 *d.* from Christmas, 1865.
9. Phœnix Gas Light Company	4 3	4 3	4 3	4 3	4 3	4 –	4 –	4 –	None supplied.								
„ „ „	4 9	4 9	4 9	4 9	4 9	4 3	4 3	4 3	–	–	–	–	–	–	–	–	Charged to outlying districts only.
10. Ratcliff Gas Light and Coke Company	4 6	4 6	4 6	4 6	4 6	4 6	4 6	4 6	None supplied.								
11. South Metropolitan Gas Light Company	4 –	4 –	3 8	3 8	3 8	3 8	3 4	3 4	None supplied.								
12. Surrey Consumers Gas Company	4 6	4 6	4 6	4 6	4 6	4 6	4 6	4 6	None supplied			–	–	–	–	–	To be reduced to 4 *s.* from Midsummer next.
13. Western Gas Light Company	None supplied		–	–	–	–	–	–	6 –	6 –	6 –	6 –	6 –	5 6	5 6	5 6	

App. No. 13.

— III. —

RETURN of the Total Amount charged to each VESTRY or DISTRICT BOARD by each COMPANY supplying GAS to the METROPOLIS for the last Two Years, with the Number of Lamps in each Case.

THE CHARTERED GAS LIGHT AND COKE COMPANY.

Name of Vestry or District Board.	1864.		1865.	
	Number of Lamps.	Total Charge.	Number of Lamps.	Total Charge.
		£. s. d.		£. s. d.
St. George, Hanover-square	1,166	4,722 6 –	1,166	4,722 6 –
St. Margaret and St. John, Westminster	861	3,487 1 –	861	3,487 1 –
St. Marylebone	270	1,228 10 –	270	1,228 10 –
St. Pancras	53	241 3 –	53	241 3 –
St. Ann, Soho	196	891 16 –	196	891 16 –
St. Giles	14	63 – –	14	63 – –
St. James, Westminster	435	1,761 15 –	435	1,761 15 –
City of London	1,099	6,008 8 10	1,099	6,001 1 3
Clerkenwell	312	1,488 – –	312	1,532 14 8
St. Luke	188	928 13 11	188	932 8 8
St. Andrew and St. George	47	163 15 11	47	212 14 3
St. Sepulchre	23	77 16 1	23	104 13 –
Saffron Hill	9	30 8 5	9	40 19 –
Glass House Yard	19	64 5 2	19	86 9 –
Whitechapel Board of Works (Norton Folgate)	10	54 15 –	10	54 15 –
Shoreditch	80	368 11 –	80	357 1 –
St. Mary, Islington	12	58 11 6	12	63 18 –

The amounts charged include gas lighting and extinguishing, repairing, painting and cleansing. A reduced scale of charge equivalent to the reduction then made to private consumers came into operation at Christmas 1865.

THE CITY OF LONDON GAS LIGHT AND COKE COMPANY.

Name of Vestry or District Board.	1864.		1865.	
	Number of Lamps.	Total Charge.	Number of Lamps.	Total Charge.
		£. s. d.		£. s. d.
Vestry of Clerkenwell	65	263 8 –	65	263 8 –
Board of Works, Strand District	49	174 9 –	49	174 9 –
Board of Works, Holborn District	112	462 – –	112	462 – –
Board of Works, Whitechapel District	16	67 4 –	16	67 4 –

App. No. 13.

COMMERCIAL GAS COMPANY.

Name of Vestry or District Board.	1864.		1865.	
	Number of Lamps.	Total Charge.	Number of Lamps.	Total Charge.
		£. s. d.		£. s. d.
Poplar District Board of Works	988	4,545 6 2	988	4,545 6 2
Whitechapel District Board of Works	913	4,059 8 2	913	4,059 8 2
Limehouse District Board of Works	432	1,943 13 9	432	1,943 13 9
The Vestry of the Hamlet of Mile End Old Town	656	2,897 12 6	656	2,897 12 6
The Vestry of the Parish of St. Matthew, Bethnal Green	64	264 17 6	64	264 17 6
The Trustees of the Middlesex and Essex Roads	82	407 2 –	82	407 2 –

EQUITABLE GAS LIGHT COMPANY.

Name of Vestry or District Board.	1864.		1865.	
	Number of Lamps.	Total Charge.	Number of Lamps.	Total Charge.
		£. s. d.		£. s. d.
St. Martin-in-the-Fields	597	2,088 8 –	600	2,102 10 11
Strand District Board of Works	226	922 2 –	226	920 10 –
Trustees of Thomas Cubitt	445	1,835 6 2	446 for 3 months.	459 18 8
St. George, Hanover-square	83	336 16 3	83 for 3 months. 525 for 9 months.	1,684 8 –
Westminster Board of Works	98	404 5 –	99	407 12 2

GREAT CENTRAL GAS CONSUMERS' COMPANY.

Name of Vestry or District Board.	1864.		1865.	
	Number of Lamps.	Total Charge.	Number of Lamps.	Total Charge.
		£. s. d.		£. s. d.
Commissioners of Sewers of the City of London.	1,752	7,098 – –	1,752	9,738 16 11

N.B.—The quantity consumed by each lamp in 1864 as per contract was three feet per hour, and in 1865 five feet per hour.

App. No. 13.

IMPERIAL GAS COMPANY.

Name of Vestry or District Board.	1864. Number of Lamps.	1864. Total Charge. £.	s.	d.	1865. Number of Lamps.	1865. Total Charge. £.	s.	d.
Paddington	1,431	7,286	–	–	1,478	7,378	–	–
St. George's, Hanover-square	11	58	–	–	11	52	–	–
Marylebone	3,210	10,820	–	–	3,215	10,837	–	–
Crown Lands	344	1,720	–	–	344	1,617	–	–
Hampstead	705	3,313	–	–	793	3,410	–	–
St. Pancras	2,714	12,980	–	–	2,862	13,407	–	–
Bloomsbury	523	2,537	–	–	522	2,387	–	–
St. Andrew's and St. George-the-Martyr.	115	542	–	–	115	535	–	–
Clerkenwell	334	1,586	–	–	337	1,555	–	–
Islington	2,352	10,878	–	–	2,510	11,421	–	–
Highgate	36	189	–	–	37	181	–	–
Hornsey	57	299	–	–	66	323	–	–
Stoke Newington and Hackney	1,502	7,510	–	–	1,581	7,431	–	–
Bethnal Green	673	2,641	–	–	718	2,821	–	–

The amount charged includes gas lighting and extinguishing, repairing, painting and cleaning, and, in the case of Paddington, a rent for the Company's lamp-posts, &c.

INDEPENDENT GAS LIGHT AND COKE COMPANY.

Name of Vestry or District Board.	1864. Number of Lamps.	1864. Total Charge. £.	s.	d.	1865. Number of Lamps.	1865. Total Charge. £.	s.	d.
St. Leonard, Shoreditch	1,102	4,403	3	4	1,097	4,293	–	2
St. Luke, Old-street, Middlesex	404	1,446	16	11	406	1,437	5	–

THE LONDON GAS LIGHT COMPANY.

Name of Vestry or District Board.	1864. Number of Lamps.	1864. Total Charge. £.	s.	d.	1865. Number of Lamps.	1865. Total Charge. £.	s.	d.
Board of Works, Strand District	220	881	12	2	220	878	19	–
Board of Works, Holborn District	217	1,014	17	7	217	1,011	6	7
Board of Works, St. Giles' District	329	1,420	14	2	328	1,423	3	6
The Vestry of St. Martin's-in-the Fields	38	133	–	–	38	133	–	–
The Vestry of St. George, Hanover-square	843	3,422	11	8	846	3,418	18	–
The Vestry St. Luke's, Chelsea	751	3,337	6	2	761	3,397	13	2
The Vestry of St. George-the-Martyr, Southwark	110	495	–	–	110	495	–	–
The Vestry of St. Mary, Lambeth	601	2,670	1	11	615	2,733	14	6
* Board of Works, Fulham District	245	1,442	6	7	253	1,483	18	8
† Board of Works, Wandsworth District	249	1,304	13	7	261	1,414	9	4

Mem.—These amounts include the expense of lighting, extinguishing, and keeping in repair the Posts, lanterns and services; say from 15*s.* to 19*s.* per lamp.

* These amounts include hire of posts, &c., and requiring very extensive mains, price regulated accordingly.

† The same reasons apply to this case, except hire of lamp-posts.

App. No. 13.

PHŒNIX GAS LIGHT AND COKE COMPANY.

Name of Vestry or District Board.	1864. Number of Lamps.	1864. Total Charge. £.	s.	d.	1865. Number of Lamps.	1865. Total Charge. £.	s.	d.
St. Saviour's	328	1,394	–	–	328	1,394	–	–
Christ Church	166	705	–	–	166	705	–	–
St. George-the-Martyr	400	1,700	–	–	400	1,700	–	–
Clapham	482	2,412	–	–	482	2,412	–	–
Battersea	154	835	–	–	154	835	–	–
Streatham	91	487	–	–	91	487	–	–
Wandsworth	6	40	–	–	6	40	–	–
Newington	484	2,119	–	–	484	2,119	–	–
Camberwell	76	343	–	–	76	343	–	–
Bermondsey	63	268	–	–	63	268	–	–
Lambeth	1,186	5,264	–	–	1,186	5,264	–	–
Greenwich	509	2,424	–	–	509	2,424	–	–
Lewisham	278	1,459	–	–	278	1,459	–	–
Charlton	25	131	–	–	25	131	–	–
Kidbrooke	7	37	–	–	7	37	–	–
Lee	197	985	–	–	197	985	–	–
Eltham	9	47	–	–	9	47	–	–

RATCLIFFE GAS LIGHT AND COKE COMPANY.

Name of Vestry or District Board.	1864. Number of Lamps.	1864. Total Charge. £.	s.	d.	1865. Number of Lamps.	1865. Total Charge. £.	s.	d.
St. George's Vestry	441	1,900	10	–	443	1,910	–	–
Limehouse Board	239	1,066	18	–	240	1,071	13	–
Whitechapel Board	156	741	–	–	158	750	10	–
Mile End Old Town	6	28	10	–	6	28	10	–

SOUTH METROPOLITAN GAS LIGHT COMPANY.

Name of Vestry or District Board.	1864. Number of Lamps.	1864. Total Charge. £.	s.	d.	1865. Number of Lamps.	1865. Total Charge. £.	s.	d.
Camberwell	1,273	5,281	–	–	1,331	5,309	–	–
Lambeth	524	2,301	–	–	537	2,142	–	–
Bermondsey	157	635	–	–	158	631	–	–
St. George, Borough	76	311	–	–	76	299	–	–
Greenwich	25	106	–	–	25	106	–	–
Newington	371	1,338	–	–	376	1,498	–	–
Streatham	205	957	–	–	207	929	–	–

App. No. 13.

SURREY CONSUMERS' GAS COMPANY.

Name of Vestry or District Board.	1864.			1865.		
	Number of Lamps.	Total Charge.		Number of Lamps.	Total Charge.	
		£. s. d.			£. s. d.	
St. Olave's District Board of Works	416	2,001	17 2	417	1,964	1 3
Bermondsey Vestry - - -	433	1,811	7 3	455	1,854	16 9
Rotherhithe Vestry - - -	345	1,543	12 6	348	1,560	17 6
Greenwich District Board of Works.	457	2,087	6 –	471	2,111	5 3

WESTERN GAS COMPANY.

Name of Vestry or District Board.	1864.			1865.		
	Number of Lamps.	Total Charge.		Number of Lamps.	Total Charge.	
		£. s. d.			£. s. d.	
Vestry of St. James, Westminster	315	1,275	15 –	316	1,183	7 3
Westminster Board of Works -	226	875	8 2	226	843	5 7
Vestry of St. Luke, Chelsea -	30	135	– –	31	132	18 5
Fulham Board of Works - -	37	181	13 –	37	179	9 –
Vestry of St. John, Hampstead -	78	359	6 7	98	390	9 6
Vestry of Kensington - -	1,686	7,446	15 –	1,835	7,413	14 2

The amount charged includes gas lighting and extinguishing, repairing, painting, and cleaning, and, in the case of the Fulham Board of Works, a rent for the Company's lamp-posts, &c.

Appendix, No. 14.

RETURN of "Reserved Fund" formed by the several Metropolitan Gas Companies. App. No. 14.

	£.
1. Chartered Gas Company - - - -	19,118
2. City of London Gas Light Company - -	None.
3. Commercial Gas Company - - - -	8,317
4. Equitable Gas Light Company - - -	None.
5. Great Central Gas Consumers' Company -	None.
6. Imperial Gas Light Company - - -	83,834
7. Independent Gas Light and Coke Company -	18,000
8. London Gas Light Company - - -	None.
9. Phœnix Gas Light Company - - -	8,444
10. Ratcliff Gas Light and Coke Company - -	None.
11. South Metropolitan Gas Light Company -	20,000
12. Surrey Consumers' Gas Company - - -	None.
13. Western Gas Light Company - - -	None.

I N D E X

TO THE

REPORT

FROM THE

SELECT COMMITTEE

ON THE

LONDON (CITY) CORPORATION GAS, &c. BILLS.

Ordered, by The House of Commons, *to be Printed.*
15 *May* 1866.

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at 158, Fenchurch-street, by the Great Central Company, that company having been supplying his predecessors, 905–909——Great dissatisfaction of witness with the gas both of the Central Company and the City of London Company, 910. 961–964——Desire expressed by witness to use the gas of the City of London Company at 158, Fenchurch-street, in lieu of that of the Great Central Company; refusal of the former company to supply him, 910–919. 942–959. 965, 966. 977–979.

Overcharge made against witness by the Great Central Company, which made him wish to go to the City Company; necessity of his paying this overcharge and continuing with the former company through the refusal of the latter to supply him, 920–941. 960. 965–971——Belief as to the provisions of the Act of 1860 being insufficient for the protection of the public; witness, however, not being conversant with the Act in detail, 972–978.

Brighton. Statement as to the maximum price for fourteen candle gas in Brighton having been fixed at 3 *s.* 6 *d.*, and at 3 *s.* 9 *d.* for fifteen candles, in a Bill lately introduced by a new company; details herein as to the probable cost of distribution, price of coal, value of the residual products, &c., in London and Brighton, respectively, *Stevenson* 4260–4289. 4336–4350. 4422–4425——Greater expense of distribution in Brighton than in London, so that gas should be dearer in the former place, *ib.* 4263. 4270——Opportunity given to the Brighton companies to complete, stringent regulations being provided in regard to breaking up the streets, *ib.* 4281–4284——Explanation that in fixing the maximum price at 3 *s.* 6 *d.* in the Brighton Bill, a dividend of ten per cent. was allowed for, *ib.* 4340. 4423.

Burners. Adoption of large burners by witness's firm in order to procure increased illuminating power; trifling improvement thereby, *Jeffery* 16–38. 161–166. 206–219——Further explanation as to the alteration by witness of the burners formerly in use, *ib.* 216–219. 251–263. 269–271——Preference given to the fish-tail burners as compared with the Argand, *Johnson* 564–570——Advantage of the same burners being used in testing as are in general use, *Hillier* 1381–1389; *Clemenshaw* 2084; *Hedley* 2475——Impracticability of ordinary consumers using the Argand or new test burner, *Hughes* 2126–2134——Disuse generally of the Argand burner by ordinary consumers, *Hedley* 2304, 2305.——*See* also *Birmingham Testing Arrangements.*

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Camberwell. Better illuminating power and less price of the gas used by witness at his private residence, at Camberwell, than of the gas used in Regent-street and Lombard-street, *Medwin* 723–729.

Cannel Gas:

Belief as to Cannel coal not being used in London for the so-called Cannel gas, *Maclure* 348–350. 359–365.

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Witness states that in Lancashire, North Wales, and Scotland, there are very large fields of Cannel available, on proper demand, for the manufacture of gas, *Lancaster* 3660 *et seq.*——Readiness of the Wigan Company to contract for the supply of 300,000 tons of Cannel a year, in London or elsewhere, *ib.* 3666–3669——Delivery of Wigan Canne in London, at about 23 *s.* a ton at the present time, *ib.* 3672–3674. 3717–3719——Large illuminating power of Cannel gas, as in Liverpool and Manchester, *ib.* 3675——Use of Cannel coal lately for the manufacture of petroleum oil, the price of Cannel, however, having but slightly advanced within the last five or six years, *ib.* 3685–3689.

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Carcel Lamp. Advantage of the Carcel lamp, or the French test, in preference to the photometer, *Hughes* 2259, 2267.

Carlisle. Supply of gas in Carlisle by the corporation, an arrangement having been made in 1846 for buying up the shares of the old company which formerly supplied the town, *Nanson* 2864-2866——Immense increase of consumption and great decrease of price since the works have been in the hands of the Corporation, the present price being 3 *s.* per 1,000 cubit feet, *ib.* 2867-2884. 2891-2895. 2900-2916——Purchase of the works for 18,000 *l.*, which sum has been reduced out of surplus profits to 12,709 *l*, *ib.* 2885-2890——Further transfer from the profits of about 8,000 *l.* for local improvements, in addition to 2,000 *l.* set aside as a reserve fund, *ib.* 2896-2899.

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Chartered Gas Company. Evidence as to the inferior and impure quality of the gas supplied to witness's establishment in Regent-street by the Chartered Gas Company, *Medwin* 686, *et seq.*——Statement as to the occasional insufficiency of the supply from the Chartered Company for witness's business, *ib.* 689-697. 791-795.

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Paper supplied by Mr. Hughes, showing the share capital and profit of the Company in each of the years 1861-64, *App.* 291——Table prepared by Mr. Hughes, showing the receipts and expenditure of the Company in 1864 per ton of coal used, *ib.* 294, 295; similar particulars for the year 1861, *ib.* 310, 311.

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Chemical Board. Approval, on the part of the companies, of a Chemical Board, to be appointed by the Secretary of State, and paid by the companies; importance of the question of purity being thus set at rest, *Baxter* 4930–4935. 4984–4990——Functions proposed to be vested in the Chemical Board with a view to a settlement of the mode of testing and the amount of purity to be required, *ib.* 4984–4990. 5041–5047.

Recommendation by the Committee that a Chemical Board of three members should be appointed from time to time, at the expense of the gas companies, by the Secretary of State, *Rep.* v.——The proposed Board should regulate the analysis of the purity and illuminating power of the gas, and should have power to fix the mode and places for testing the gas, and should report to the Home Secretary, *ib.*

City of London Gas Company. Total of thirty-one occasions on which, out of 870 examinations in 1865, the gas of the City of London Company has been below the standard of the Act of 1860, *Letheby,* 1177–1181——Low profit of the City of London Company adverted to in connexion with the large proportionate capital of the Company, *Hughes* 3792——Explanation that an item of 5,360 *l.* which appears as a reserve in a return of the City of London Company is really a floating balance carried forward as working capital, *Baxter* 3128–5136.

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Circumstance of their being three different prices in Manchester, the price in the outer townships being 3 *s.* 6 *d.*, 1890, 1908, 1909——Price of 15 *s.* per ton paid in Manchester for Wigan or cannel coal, 1891–1894——Increased price of Wigan coal in London as compared with Manchester; calculation that this is compensated for by the higher price of coke in London, 1895–1931. 2006–2010.——Statement as to the price in Manchester having formerly been 4 *s.*, 1932–1938——Total of about 500,000 *l.* of capital in the Manchester works upon which the corporation pay interest, 1939–1943.

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2. *Suggestions for a more Summary System of Penalties.*
3. *Representations on the part of the Companies as to the sufficiency of the present Remedies in the hands of the Public.*

1. *Complaints as to the Difficulty of Legal Proceedings and Enforcement of Penalties under the Act of* 1860:

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1. *As to the Price previously to and since the Act of* 1860:

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Reduction of price in Liverpool and other places, accordingly as the consumption has increased, *Nanson* 2941–2943——Objection to an inferior and lower priced gas for the poorer consumers, inasmuch as the better and high-priced gas is on the whole the

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PRICE OF GAS—continued.

2. *As to the Price in future, and the Reduction to be looked for*—continued.

cheaper, *Heron* 3635–3639——Opinion that 12-candle gas could be supplied in the Metropolis for about 2*s.* 10*d.*, after paying 10 per cent., the capital being moderate, *Hughes* 3852–3857——The maximum of 4*s.* 6*d.* for 12-candle gas in London is altogether too high, *Stevenson* 4260——Estimate that the companies can give a light of 14 candles and pay a dividend of 10 per cent. upon a proper amount of capital with a maximum price of 3*s.*, *ib.* 4412-4415——With their present capitals the London companies require a price of 3*s.* 4*d.* or 3*s.* 6*d.* to pay 10 per cent., *ib.* 4416. 4481–4483——Absence of motive to the companies to reduce the price, *ib.* 4429–4433. 4484, 4485.

Calculation that gas of 18 candles could be supplied at 3*s.* 6*d.* per 1,000 feet, paying a dividend of 10 per cent., *Romans* 4602–4604——Conclusion that good gas may be supplied in London at the price of 2*s.* 6*d.* per 1,000 cubic feet, allowing a dividend of 10 per cent., *Hedly* 4773-4782.

Necessity of the excess of profits beyond 10 per cent. being applied in reduction of price as soon as the reserve fund is complete, *Baxter* 4834, 4835. 4846, 4847. 4851. 4854——More rapid reduction in the price when the companies are once paying their full dividend and the reserve fund is complete, *ib.* 4861——Expectation that if the companies are allowed to go on under the present arrangements the increasing supply of gas will speedily enable them to reduce the price, *ib.* 4861, 4862. 4892—— Prospect of a reduction of the price in the City in the absence of competition, but not otherwise, *ib.* 5072. 5074——Constant effort of the 13 companies in London to economise the production and reduce the price, so that it may be safely inferred there is nothing excessive in the charge to the public, *ib.* 5073, 5074. 5095.

The Committee are of opinion that the maximum price should be reduced, *Rep.* v.

See also *Agitation and Complaints. Brighton. Cannel Gas. Coal. Competition Districting Arrangement. Dividends. Hastings. Illuminating Power. Leakage. Liverpool Lothian Cannel. Manchester. Plymouth. Provincial Towns. Public Lights. Purification of Gas. Reserve Funds. Rochdale. Uxbridge. Walsall. West London Junction Gas Company.*

Profits of Gas Companies. Immense profits made by the Metropolitan companies under the exisiting arrangements, *Rogers* 1871, 1872.——Reference to a paper prepared from the accounts of the companies; showing the profits of each company in the several years 1861–64, *Hughes* 3475–3483; *App.* 291, 292.

See also *Back Dividends. Capital of Companies. Capitalization of Profits. Dividends. Prices. Reserve Funds. Value of Gas shares.*

Provincial Towns. The illuminating power is below the average in London as compared with other places, while the price is above the average, and the limitation of back dividends is peculiarly favourable, *Stevenson* 4294, 4295——Cheap production and low prices in certain towns adverted to as not feasible under the different circumstances of manufacture and supply in London, *Baxter* 5073–5076——Lower prices in provincial towns adverted to by the Committee, *Rep.* v.

See also *Brighton. Carlisle. Edinburgh. Manchester. Rochdale. Walsall.*

PUBLIC LIGHTS:

1. *Particulars relative to the Consumption of Gas by the Lamps in the City; Deficiencies complained of.*
2. *Question of supplying the Public Lights by Meter.*
3. *Cost of Public Lighting in the City.*
4. *Practice in Lighting and Extinguishing the Lamps.*
5. *Necessity of complying with the Company's Conditions.*
6. *Deficient Supply generally, as well as in the City.*
7. *Charges for Public Lighting in the Metropolis generally.*

1. *Particulars relative to the Consumption of Gas by the Lamps in the City; Deficiences complained of:*

Supervision exercised by witness on the part of the Commissioners of Sewers in regard to the public lights in the City, *Haywood* 2494–2496——Report by Dr. Letheby and witness in December 1864, after a careful investigation into the matters of complaint: great increase shown between 1861 and 1864 in the number of defective lights, *ib.* 2503–2507. 2608–2610——Liberal amount of gas supplied for many years to the lamps; the falling off having gradually increased since the year 1861, *ib.* 2511–2519——Reports made by the police since the year 1861, showing the number of grave defects, *ib.* 2514–2519——Appointment in 1862 of an officer who has worked under the joint direction of Dr. Letheby and witness in investigating the causes of the defective lighting, *ib.* 2520.

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PUBLIC LIGHTS—continued.

1. *Particulars relative to the Consumption of Gas, &c.*—continued.

Statement as to the meters having been affixed to some of the lamps in order to test the quantity of gas supplied, the result showing that the Chartered and Great Central Companies gave considerably less than the contract quantity of cubic feet per hour, *Haywood* 2521–2534. 2616–2623——Explanation as to there having been a larger supply and consumption at metered lamps than at lamps without meters, *ib.* 2528–2530. 2624–2627——Dissent of the Gas Companies from the conclusions shown by the application of meters to the lamps; belief as to the entire accuracy of such conclusions, *ib.* 2533–2545. 2600–2603.

General improvement in the lighting subsequently to the experiments and observations carried out under witness; continuance of such improvement from the end of 1864 down to the present time, *Haywood* 2536–2539. 2588–2590. 2608–2610. 2624–2627——Stipulation for a supply of five cubic feet per hour, *ib.* 2563–2565——Diminished pressure where a meter has been applied to a lamp; allowance made for this in calculating the deficient supply, *ib.* 2593–2599.

Communication to the companies of the majority of the results ascertained from the experiments, *Haywood* 2600–2603——Marked inferiority of the public lighting in the City up to the last year or two as compared to what it was eight or ten years ago, *ib.* 2611——Increase of supply by the companies in the case of lamps with meters further adverted to, *ib.* 2624–2627.

Marked improvement this year in the public lighting, it being manifest that the full contract quantity is now given, *Haywood* 4146–4149. 4173——Deficiency generally of the supply to the City lamps till a recent period, *ib.* 4166–4174. 4180–4182——Statement as to certain lamps with meters having been shown to consume more than the contract quantity, and as to this result having been produced by special care on the part of the companies or their servants in the case of such lamps, *ib.* 4169–4173. 4180–4186.

Abstract statement showing the total number of defective lights in the City as reported by the police during the years 1861–65, *App.* 289——Rate of consumption in 1862 at certain public lamps not having meters attached to them; average deficiency, *ib.*

2. *Question of supplying the Public Lights by Meter.*

Offer by one of the companies to allow meters to be fixed to every lamp; objections on account of the expense and trouble involved, *Haywood* 2558–2559, 2580–2582. 2629–2632——Impression that meters are fixed to some 50 or 60 lamps, *ib.* 2560–2562——Advantage of a check upon the companies by means of a sufficient number of metered lamps, and by a system of regulators attached to the remainder; undue expense of meters to all the lamps, *ib.* 2629–2632——Decided objection to the contract system of supplying the public lights at a fixed price, irrespectively of any check upon the quantity of gas supplied, *ib.* 3355–3356——Very laborious and unsatisfactory mode of testing the consumption of the public lights, unless meters be used, *ib.* 3357. 3362, 3363.

Anomaly in gas not being supplied to the public lamps by meter as well as to private consumers, *Hughes*, 3359. 3424–3426——Evidence in favour of the average meter system being applied to the lamps; that is, by attaching one meter to every twelfth lamp, *ib.* 3365–3369. 3414. 3417–3422——Great expense and trouble of a meter to every lamp, so that such test is quite impracticable, *ib.* 3367. 3415. 3423. 3487–3503.

Impracticability of a meter to every lamp further adverted to, *Hughes* 3467, 3468. 3487–3503——Facility of a fair test by means of a meter to every twelve lamps; adoption of this plan in several recents Acts, *ib.* 3469–3473. 3485, 3486. 3507——Further examination in support of the proposition that, whilst it is unreasonable to require a meter to every lamp, it is exceedingly desirable to adopt the average meter system of one meter to a certain number of lamps, *ib.* 3831–3851.

Obstacle to testing the quantity supplied to the lamps, in the absence of meters, *Edwards* 3984–3988——Approval of meters to lamps as the only mode of arriving at absolute correctness; the expense of a meter for every lamp being, however, a great obstacle, *Haywood* 4188–4205. 4212—— Decided approval of the average meter system in the case of the public lamps; its practicability, *Hedley*, 4682–4684——Impracticability of placing a meter to every lamp, *ib.* 4685.

Uniform test if a meter were applied to every twelfth lamp, *Baxter* 4942–4944——Less gas burnt at a lamp, if a meter be applied, *ib.* 4942——Necessity in fairness to the companies of a meter to every lamp, if meters are required at all, *ib.* 4943, 4944.

3. *Cost of Public Lighting in the City:*

Very large increase of late years in the cost of public lighting in the City, *Letheby* 1595; *Haywood* 2508——Details in connection with the charge for public lights in the City, and the unduly heavy charge made by the companies since the Act of 1860, *De Jersey* 4076–4085; *Haywood* 4123, *et seq.*——Evidence as to the great increase which has taken place of late years in the cost of public lighting in the City; table delivered in showing the per-centage of increase between the different years, *Haywood* 4120–4145.

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Public Lights—continued.

3. *Cost of Public Lighting in the City*—continued.

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4. *Practice in Lighting and Extinguishing the Lamps:*

Opinion that the lighting and extinguishing of the lamps in the City should rest with the Commissioners of Sewers, *Haywood* 2629——Power of the lamp-lighter in the majority of cases to give a good or bad flame as he chooses, *Hughes* 3355——Stipulations with the companies that the lamps should be lighted before sunset and extinguished after sunrise; there has not been much complaint on this score, *Haywood* 4183–4186. 4195–4197.

5. *Necessity of complying with the Companies' Conditions:*

Statement as to the companies having refused since the Act of 1860 to allow certain conditions in their contracts for the public lighting, which they had previously accepted and tendered upon, *Haywood* 2546–2551. 2615——Payment to the companies of the full contract price for each lamp, although it was proved that the contract quality was not supplied; difficulty under the Act of any remedy on this score, *ib.* 2549–2557. 2615–2620——Demand by the companies to snpply the lamps almost on their own conditions, *ib.* 4164, 4165. 4183. 4187——Refusal of the companies since 1860 to tender, save under the conditions of the Metropolis Gas Act, *ib.* 4187. 4206, 4207.

6. *Deficient Supply generally, as well as in the City:*

Result of the witness's experiments in several parishes that the consumption per lamp was only 3½ cubic feet per hour, instead of five cubic feet as contracted for, *Hughes* 3362–3364.

7. *Charges for Public Lighting in the Metropolis generally:*

Return of the total amount charged to each vestry or district Board by each company for 1864 and 1865, with the number of lamps in each case, *App.* 344–348.

See also *Agitation and Complaints. Arbitration. Carburettors. Great Central Gas Company. Holborn. Price of Gas. Profits of Gas Companies. St. James's, Clerkenwell. Westminster. Worthing.*

Public Officer. Opinion that the legislature should make increased provision for the protection of the gas consumers against the exclusive privileges of the companies under the Act of 1860; contemplated appointment of a public officer for the purpose, *Slater* 874–882. 892, 893.

Public, The. See *Act of* 1860. *Agitation and Complaint. Competition. Districting Arrangement. Monopoly. Penalties. Price of Gas. Public Lights.*

Purification of Gas:

Objection to the practice of the companies in using oxide of iron instead of hydrate of lime in purifying the gas, *Johnson* 590–597. 603–610——Impediments to the use of lime instead of oxide of iron, with a view to reducing the sulphur to a minimum proportion, *Letheby* 1068–1075. 1084, 1085——Effect of oxide of lime in lowering the illuminating power, *ib.* 1114, 1115——Further statement as to the obstacle, on the score of space and cost, in using hydrate of lime as a purifier, *ib.* 1116–1124——Objection to using lime as a purifier unless the works are out of town, and as being costly, *ib.* 1310–1314——Inoffensiveness of lime as a purifier if iron has first been used, *ib.* 1314——Allowance to be made on the score if price if a proper plan of purification be carried out, *ib.* 1497. 1499.

Advantage in gas works not being in populous neighbourhoods, in order that lime may be used without causing a nuisance, *Clemenshaw* 1884, 1885. 2002–2004——Discontinuance of the use of lime in London as a purifier, the result being a deterioration in quality and purity, *Hedley* 2342——Statement showing that lime may be successfully used in combination with oxide of iron without requiring any additional space, and without being offensive, *ib.* 2344–2346. 2366–2368. 2479–2489——System of purifying by a joint use of lime and oxide of iron further adverted to as enabling the production of gas in London, with not more than from five to ten grains of sulphur, *ib.* 2479–2489——Purification of the Carlisle gas by means jointly of oxide of iron and hydrate of lime, *Nanson* 2923, 2924.

Expenditure of each company, per 1,000 feet of gas sold, for purifying materials in 1861 and 1864, *App.* 308, 309. 324, 325.

Imperfect purification of gas in the metropolis, adverted to by the Committee, *Rep.* v.

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Quarter Sessions. Power of the quarter sessions to order the price to be reduced, if it be shown that there is a surplus beyond 10 per cent., after completion of the reserve fund, *Baxter* 5154. 5176-5180.

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Ratcliff Gas Company. Paper supplied by Mr. Hughes, showing the capital and profit of the company in each of the years 1861-64, *App.* 292——Table showing the receipt and expenditure of the company in 1864; per ton of coal used, *ib.* 302, 303——Similar particulars for the year 1861, *ib.* 318, 319.

Statement of the price and tonnage of coal used by the company in 1864, the capital of the company, and the capital represented by each ton of coal, *App.* 308——Statement containing similar particulars for the year 1861, *ib.* 324.

Rate of expenditure of the company under various heads per 1,000 feet of gas sold in 1864, *App.* 308, 309——Similar particulars for the year 1861, *ib.* 324, 325.

Table showing the capital and cost of coals in 1864, and the amount of capital employed for each 100 *l.* expended in coals, *App.* 309.

Annual statement of accounts, as rendered by the company to the Home Secretary, for the year ended 31 December 1865, *App.* 339——Total amount charged to each vestry or district board in 1864 and 1865 for lamps supplied by the company, together with the number of lamps in each case, *App.* 347.

Ratepayers, Supply of Gas by. See *Municipal Supply of Gas.*

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Regulators (Public Lamps). Facility of testing the supply of lamps by means of an apparatus termed the regulator, *Haywood* 4198.

Rendle, Edward. (Analysis of his Evidence.)—Is a vestryman of the parish of St. John's, Horselydown, and a member of the district Board of Works of St. Olave's, 2956-2959 —— Representation by witness of St. Olave's district in the matter of a complaint made by several parishes to the directors of the Surrey Gas Consumers Company, as to the price charged to consumers, 2960-2965 —— Lease of the Surrey Consumers Works to Mr. Croll for ten years, expiring in 1861; 2966-2969. 3045——Payment by the company since 1861 of the maximum dividend of 10 per cent., in addition to which they are also making up the back dividends during the period of Mr. Croll's lease, from eight to ten per cent., 2970-2976.

Argument as to the company not being justified in paying out of present profits the back dividend of two per cent. during Mr. Croll's lease; grounds for concluding that the shareholders have a prior claim in the shape of a reduction of price, 2976. 3022 *et seq.* ——Maintenance hitherto of the price of 4 *s.* 6 *d.* without any reduction, there being, however, some recent announcement that after Midsummer the price will be 4 *s.*; 2977-2991——Complaint against the company as to the charge for the public lights in St. Olave's district having been largely increased since 1860, when a former contract expired, 2992-3021——Belief that the increased price was not accompanied by any increase of illuminating power, 3009-3013. 3041-3044.

Statement as to the local authorities of St. Olave's not having taken any legal steps for their protection under the Act of 1860; 3014-3024. 3068-3084 ——Establishment originally of the Surrey Gas Consumers Company, especially as a consumers' company, it being, however, now carried on in the interest of the shareholders as an ordinary commercial concern, 3034-3040——Belief that a profit of 10 per cent. or more, was really made out of the gas works when under lease to Mr. Croll, at eight per cent., 3045-3054. 3085-3093——Doubt as to the precise terms of the contract or arrangement between the company and Mr. Croll; it has always been understood that there was an actual lease of the works, 3057-3067. 3088-3100.

Repairs and Extension of Works. Difficulty in reconciling the great variation in the proportion expended out of revenue upon current repairs; inference that in some cases the revenue is applied to the extension of works, *Hughes* 3786-3791. 3794-3803. 3815-3824.

Rate of expenditure of each company for repairs and maintenance in 1861 and 1864, *App.* 308, 309. 324, 325.

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Reserve Funds. Consideration as to the mode in which the accounts of the companies show the amount of reserve from year to year; difficulty of tracing the actual application of these accounts, *Hughes* 3885–3918——Great defect of the Act of 1860, in regard to the question of investing the reserve fund before a reduction in price can be claimed, *Stevenson* 4248——Doubt as to the mode of appropriation or investment of the reserve funds of the companies, *ib.* 4398–4404. 4434–4437. 4447–4457——Amendment required as to the mode in which the companies deal with their reserve funds, *Hedley* 4757–4766.

Quotation of certain clauses in the Gas Works Clauses Act of 1847, as showing the regulations in force in regard to the reserve funds of the companies, *Baxter* 4833, 4834——Details explanatory of the obligation upon, and the practice of the companies, as to putting by a reserve when the dividends reach 10 per cent. but not before, *ib.* 4834–4868——Check upon the companies applying the reserve fund in any excess of profits to the purchase of land or plant, *ib.* 4838, 4839. 4848–4854——Aggregate of one-tenth of the capital at which the reserve is fixed, *ib.* 4834.

Claim of the companies to lay by a reserve fund upon capitalized profits before reducing the price, *Baxter* 5023——Completion by several companies of their reserve, and subsequent reduction of price, *ib.* 5024. 5038–5040——Paper delivered in showing the reserved funds of the companies at Christmas 1865; preparation of this paper from returns furnished by the companies, *ib.* 5106–5114——Investment of the reserved funds in the Three per Cents., accounts of such investments being duly kept by each company having a reserve, *ib.* 5115–5124——Necessity of every company having a working balance, irrespectively of the reserve, *ib.* 5143. 5153. 5163–5167——Several companies not having any reserve, *ib.* 5157–5159. 5161, 5162.

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Residual Products. Reduction since the Act of 1860 in the price of gas, the residual products having however increased much in value; grounds for this latter conclusion, *Iliff* 482–487. 512. 523——Estimated value of the residual products in London at somewhat more than half the cost of the coal, *Hughes* 3871, 3872.——*See* also *Coke.*

Rochdale. Supply of gas to Rochdale by a private company previously to 1845, the works having in that year been transferred to the town commissioners under Act, *Mellor* 3102–3107——Total of 27,700*l.* as the cost of the works when purchased from the company, *ib.* 3108. 3189–3192. 3200–3222——Transfer of the works to the corporation in 1856, *ib.* 3109–3112——Total expenditure of 75,400*l.* on the purchase of the original works, and in the subsequent extension up to March 1865, of which amount 23,722*l.* has been paid off in mortgages and depreciation fund, *ib.* 3113–3122. 3145, 3146.

Price of 4*s.* charged within the borough, and 4*s* 6*d.* outside the borough, subject to discount according to the quantity consumed, *Mellor* 3123–3130. 3151. 3169–3178. 3227, 3228——Amount supplied to private consumers and to the public lights respectively, *ib.* 3131——Use of cannel at 15*s.* 6*d.* per ton and of coal at 7*s.* a ton, in the proportion of nine tons of the former to one ton of the latter, *ib.* 3132–3135. 3196–3202. 3224–3227——Total of about 2*l.* as the annual charge for each public light, including the cost of lighting; particulars hereon, *ib.* 3136–3144. 3153–3175——Large sum expended by the corporation out of the profits in improving the streets, *ib.* 3147–3151——Since 1844 there has been a total of 36,661*l.* expended on town improvements, *ib.* 3149, 3150.

Opinion as to the advantage to the town through the lighting being in the hands of a public body, *Mellor* 3152——Highly illuminating power of the Rochdale gas; system of test without previous notice, *ib.* 3156, 3157. 3193–3195. 3215–3219——Charge of 3*s.* 6¾*d.* per 1,000 cubic feet for the street lamps, which is about the same average charge as to private consumers, less the discount, *ib.* 3172–3178——Explanation as to the profits from the gas in the year 1863, *ib.* 3182–3188——Cost of coal further adverted to, and amount derived from the residual products, *ib.* 3196–3205.

Monoply of supply by the corporation, there being however no complaints, *Mellor* 3206–3214——The corporotion are now in Parliament to obtain waterworks, *ib.* 3223——There is no profit from the supply outside the borough, as the mains are taken a long way where there are no houses, *ib.* 3227, 3228.

Much lower working expenses of the Rochdale Corporation than of the London Companies, *Hughes* 3919, 3920.

Rogers, Edward Dresser. (Analysis of his Evidence.)—Is member of the Common Council, and of the Camberwell Board of Works; was honorary secretary of the Association of Surrey Consumers of Gas, which led to the formation of the Surrey Gas Consumers Company, 1812–1819——Just dissatisfaction of the consumers with the ordinary commercial character assumed after a time by this company, 1819——Conclusion of the consumers on the Surrey side of the river that nothing short of taking the supply of gas out of the hands of private companies will be of real service to the public generally, *ib.*

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Rogers, Edward Dresser. (Analysis of his Evidence)—*continued.*

Explanation that the shareholders are proposed to be fairly compensated under witness's scheme, 1820. 1855——Fictitious character of the so-called capital of many of the companies; careful adjustment necessary in order to arrive at the real capital, 1820. 1825. 1851–1855——Constant complaint by consumers, both as to quality and price, since the Act of 1860; 1821–1824——Complaint also that the remedies under the Act are very inadequate and unsatisfactory, 1824, 1825——Repeated complaint made as to the existence of sulphur in the gas, 1826–1828.

Part taken by witness in public discussions on the gas question; he is now one of the committee of the City of London Gas Association, 1829–1837——Dissatisfaction with a price of 4 *s.* per 1,000 cubic feet, 1838–1840——Circumstances under which witness has recently expressed his disapproval of the evidence given to the Committee by Dr. Letheby, as an officer of the Corporation. 1841–1848.

Suggested conversion of the capitals of the several gas companies into a terminable stock, to be paid off in ninety-nine years, 1855–1862. 1866, 1867——Contemplated management of the gas supply in each district or Parliamentary division by the local municipal authorities, 1862–1868——The City should be dealt with separately, as by the Bill before the Committee, 1863, 1864——Objection to the Metropolitan Board of Works managing the gas question for the metropolis generally, 1866, 1867. 1869, 1870——Immense profits being made by the companies under the existing arrangements, 1871, 1872.

Romans, John. (Analysis of his Evidence.)—Gas engineer at Edinburgh; is agent for the sale of the Marquis of Lothian's cannel coal, 4594–4596. 4613–4619——Readiness of witness to contract for a supply of Lothian cannel to the Corporation of London at 35 *s.* per ton, 4597–4599. 4652——This cannel yields 12,500 cubic feet of gas per ton, the illuminating power being nearly thirty-four sperm candles, 4600, 4601——Calculation that gas of eighteen candles could be supplied in London at 3 *s.* 6 *d.* per 1,000 feet, paying a dividend of 10 per cent., 4602–4604.

Average of from twenty-nine and a-half to thirty-two candles as the illuminating power of the Edinburgh gas, made partly from Lothian cannel, the price being 4 *s.* 4 *d.*, subject to a discount to large consumers, 4605–4610. 4638–4641——Calculation that the quality and price of the Edinburgh gas are, if reduced in proportion, equal to gas of eighteen candles at 2 *s.* 7½ *d.*, 4611. 4651——Particulars as to the cost of lighting of the public lamps in Edinburgh, 4612——Limited sale of Lothian cannel in London, notwithstanding its superior quality, and witness's readiness to supply it, 4620–4632. 4650——Very little sulphur in Lothian cannel, 4629–4637.

Belief as to the Lothian and other cannel in Scotland being, practically, almost inexhaustible, 4642, 4643. 4652–4655——Supply of Lothian cannel to Perth and Aberdeen; also to Plymouth, Exeter, &c., 4644–4646. 4656——Belief that the Edinburgh gas is the best in Great Britain; use of several kinds of cannel in its manufacture, 4646–4649——Advantage if the gas in London were improved by the partial use of Lothian cannel, 4657.

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St James's, Clerkenwell. The lights of the parish of St. James's, Clerkenwell, are supplied by the Chartered and Imperial Companies, *Paget* 3230——Details relative to an increase by each company in the charge for the public lamps, in consequence of an increased assessment placed by the vestry upon the gas works, *ib.* 3231 *et seq.*——Ultimate increase of the assessment of the Imperial Company, by arrangement from 170 *l.* to 800 *l.*, it having been proposed to assess at 3,294 *l.*; cause of this large reduction explained, *ib.* 3239–3241. 3254–3260. 3290–3308. 3320–3330——Increase from 150 *l.* to 1,022 *l.* in the case of the Chartered Company, *ib.* 3242, 3243. 3309–3312.

Consideration as to the amount gained by the parish from the increased assessment of the companies, as compared with the increased charge paid to the companies for the lamps, *Paget* 3244 *et seq.*——Price of 5 *l.* per lamp now charged by the Chartered Company, there having been no reduction since the increase, *ib.* 3283–3285——Reduction of charge by the Imperial Company from 5 *l.* to 4 *l.* 14 *s.*, *ib.* 3286–3289——Circumstance of the vestry of the parish not having considered it of any use to appoint an examiner of gas under the Act of 1860, *ib.* 3313, 3314.

St. Luke's, Chelsea. Fitting up of a testing room in the vestry hall of St. Luke's, Chelsea, upon Sugg's plan, the new burner, as prescribed by Dr. Letheby, being used, *Barclay* 1608–1610——Almost invariable result of witness's experiments that the gas of the London Company has been over the standard of twelve candles, as tested with the new burner, *ib.* 1611–1614, 1618——Excess of sulphur in the gas, to the injury of health and of goods, *ib.* 1615, 1616——Unequal pressure of the London Company's gas in St. Luke's; improvement when the parish was supplied by the Imperial Company, *ib.* 1625–1627. 1637–1641.

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St. Mary's, Kennington. Witness has made numerous experiments relative to the quality of the gas supplied to the parish of St. Mary, Kennington, the result being that the illuminating power has on most occasions been above the standard fixed by the Act of 1860, *Iliff* 374–384. 439–444——Objections in detail to the system of supply of the parish, by the Phœnix Company more especially, *ib.* 377 *et seq.*——Opinion of the vestry of St. Mary, that the standard is too low with reference to the price, *ib.* 463–465——Circumstance of witness's parish having made no complaint upon the occasion of the Phœnix Company coming to Parliament, in 1865, for additional powers, *ib.* 498, 499——There have been many complaints by private consumers in the parish, chiefly of the Phœnix Company, *ib.* 510, 511. 536.

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St. Pancras. Supply of gas to the parish of St. Pancras mainly by the Imperial Company, *Hillier* 1357——Numerous experiments made by witness, as charcoal examiner; the testing place and apparatus being provided by the local board, *ib.* 1358–1361——Details relative to the testing arrangements, and their unsatisfactory character, the gas also being unsatisfactory in quality, *ib.* 1362 *et seq.*

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Site. Absence of deterioration in gas, when properly made, though tested at six miles from the works, *Hedley* 2435–2438——Very objectionable effects of gas works in any neighbourhood, *Haywood* 4208–4210——Absence of difficulty in supplying at several miles from the works, the Corporation proposing to go to a distance of seven miles, *ib.* 4211——Conclusion as to the quality of gas being deteriorated by travelling, so that the distance of the works from the district supplied is an important consideration, *Baxter* 5079–5084.——*See* also *Purification of Gas.*

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passing it through lime, *Letheby* 1043, 1045, 1046. 1078——Absence of any specific requirements as to the purity of the gas supplied to the city, *ib.* 1062——Average proportion of sulphur found in the gas of the three City companies from 1853 to 1859, *ib.* 1063–1065——Great variation in the amount of sulphur in the gas of the several companies, *ib.* 1104–1106.

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TESTING ARRANGEMENTS:

1. *Regulations now in force: their inadequacy.*
2. *Suggestions in regard to the Burner to be used in Testing: objections to that now in use.*
3. *Suggestions generally for an Amendment of the present Testing System.*

1. *Regulations now in force: their inadequacy:*

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2. *Suggestions in regard to the Burner to be used in Testing; Objections to that now in use:*

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3. *Suggestions generally for an Amendment of the present Testing System*—continued.

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TO THE

REPORT

FROM THE

SELECT COMMITTEE

ON THE

LONDON (CITY) CORPORATION GAS, &c. BILLS.

Ordered, by The House of Commons, *to be Printed,*
15 *May* 1866.

[*Price* 8 *d.*]

270—I.

Under 8 *oz.*

MINUTES OF EVIDENCE

TAKEN BEFORE THE

SELECT COMMITTEE

ON THE

THAMES NAVIGATION BILL;

WITH THE

PROCEEDINGS OF THE COMMITTEE.

Ordered, by The House of Commons, *to be Printed,*
5 *July* 1866.

Wednesday, 18*th April* 1866.

Ordered, That the Thames Navigation Bill be read a second time and committed to a Select Committee of Eleven Members, Six to be nominated by The House, and Five by the Committee of Selection.

Thursday, 10*th May* 1866.

Select Committee nominated:—

Mr. Milner Gibson.	Sir Michael Hicks Beach.
Mr. Neate.	Mr. Yorke.
Sir George Bowyer.	

and Five Members to be named by the Committee of Selection.

Ordered, That the Committee have power to send for Persons, Papers, and Records.

Ordered, That Five be the Quorum of the Committee.

Ordered, That the Petitions presented to this House respecting the said Bill be referred to the Committee; and that such Petitioners as shall have prayed to be heard by themselves, their Counsel, or Agents, be heard upon their Petitions, if they think fit, and Counsel heard in favour of the Bill against such Petitions.

Thursday, 17*th May* 1866.

Ordered, That Lord Eustace Cecil be added to the Select Committee on the Bill.

Friday, 18*th May* 1866.

Committee of Selection.

The following Members are added to the Select Committee on the Thames Navigation Bill:—

Sir Matthew White Ridley.	Colonel Napier Sturt.
Mr. Acland.	Captain Vivian.
Mr. A. W. Peel (Warwick).	

Friday, 25*th May* 1866.

Committee of Selection.

Sir Matthew White Ridley is discharged from further attendance on the Committee, and Colonel Gilpin is added thereto.

Friday, 1*st June* 1866.

Ordered, That the Parties appearing before the Select Committee on the Thames Navigation Bill have leave to print the Minutes of the Evidence taken before the Select Committee, day by day, from the Committee Clerk's copy, if they think fit.

Thursday, 5*th July* 1866.

Ordered, That the Committee have power to report the Minutes of Evidence taken before them to The House.

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PROCEEDINGS OF THE COMMITTEE.

Monday, 28*th May* 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON was called to the Chair.

Mr. Milner Gibson.	Mr. A. W. Peel.
Captain Vivian.	Colonel Napier Sturt.
Sir George Bowyer.	Sir Michael Hicks Beach.
Mr. Neate.	

The Committee deliberated.

[Adjourned to Monday next, at Twelve o'clock.

Monday, 4*th June* 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON, in the Chair.

Sir George Bowyer.	Sir Michael Hicks Beach.
Captain Vivian.	Mr. Yorke.
Mr. Neate.	Lord Eustace Cecil.
Mr. Acland.	Mr. A. W. Peel.
Colonel Napier Sturt.	

Preamble read a first time.

Counsel for the Bill:—Mr. *Phinn* and Mr. *Reilly*.

Agent:—Mr. *Wyatt*.

Petitions against the Bill, read:

1. Chancellor, Masters, and Scholars, of University of Oxford.
   No party appeared in support thereof.
2. Commissioners of Thames and Isis Navigation.
   Agent:—Mr. *Graham*.
3. P. Ibbotson and others.
   Counsel:—Mr. *Johnson* and Mr. *Lumley Smith*.
   Agents:—Messrs. *Loch & Co.*
4. G. C. Cherry.
   Agents:—Messrs. *Dorington & Co.*
5. President and Scholars of St. John's College.
   Counsel:—Mr. *Adams*.
   Agents:—Messrs. *Baxter & Co.*

6. Conservators of River Thames.
   Counsel:—Mr. *Clerk* and Mr. *Sargood.*
   Agent:—Mr. *Wyatt.*

7. R. Campbell.
   Agent:—Messrs. *Dyson & Co.*

8. Corporation of Abingdon.
   Counsel:—Mr. *Macnamara.*
   Agents:—Messrs. *Dale & Co.*

9. Lincoln College, Oxford, &c., &c.
   Counsel:—Mr. *O'Malley.*
   Agents:—Messrs. *Dale & Co.*

10. Rev. Walton Kitching.
    Agents:—Messrs. *Dorington & Co.*

11. A. Kerr B. Granville.
    Agents:—Messrs. *Stephens & Co.*

12. Walter Lawrence Lawrence.
    Agents:—Messrs. *Marriott & Co.*

13. Southwark and Vauxhall Water Company.
    Counsel:—Mr. *Holland.*
    Agents:—Messrs. *Pritt & Co.*

14. Grand Junction Waterworks Company.
    Counsel:—Mr. *Holland.*
    Agents:—Messrs. *Pritt & Co.*

15. R. W. Jackson.
    Agents:—Messrs. *Marriott & Co.*

16. Chelsea Waterworks Company.
    Counsel:—Mr. *Brett.*
    Agents:—Messrs. *Dorington & Co.*

17. Lambeth Waterworks Company.
    Counsel:—Mr. *Toulmin Smith.*
    Agents:—Messrs. *Bell & Co.*

18. Corporation of Rochester.

19. Mayor, Aldermen, and Citizens of Oxford.
    No parties appeared in support of these Petitions.

20. Millowners and Mill occupiers of the Upper District of River Thames (Allen, &c.)
    Counsel:—Mr. *Lopez.*
    Agents:—Messrs. *Gregory.*

21. Corporation of Reading.
    Counsel:—Mr. *Macnamara.*
    Agents:—Messrs. *Pritt & Co.*

22. Millowners, &c., Upper District (Williams, &c.)
    Agents:—Messrs. *Dorington & Co.*

23. Metropolitan Board of Works.
    Counsel:—Mr. *Burke* and Mr. *Wilkinson.*
    Agents:—Messrs. *Dyson & Co.*

24. John Loder Symonds.
    No party appeared in support thereof.

Mr. *Phinn* was heard to open the case in support of the Preamble of the Bill.

Mr. *Thomas Hedges Graham,* examined.

[Adjourned to To-morrow, at Twelve o'clock.

Tuesday, 5th June 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON in the Chair.

Sir George Bowyer.	Colonel Napier Sturt.
Mr. Neate.	Sir Michael Hicks Beach.
Mr. A. W. Peel.	Colonel Gilpin.
Mr. Acland.	Lord Eustace Cecil.
Captain Vivian.	Mr. Yorke.

Petition of Company of Proprietors of West Middlesex Waterworks Company, read.

Counsel:—Mr. *Bailey.*

Agents:—Messrs. *Pritt & Co.*

Mr. *T. H. Graham,* further examined.

Mr. *James Castle,* examined.

[Adjourned to To-morrow, at Twelve o'clock.

Wednesday, 6th June 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON in the Chair.

Sir George Bowyer.	Captain Vivian.
Mr. Neate.	Sir Michael Hicks Beach.
Colonel Napier Sturt.	Mr. Yorke.
Mr. A. W. Peel.	Lord Eustace Cecil.
Mr. Acland.	

Mr. *James Castle,* further examined.

Mr. *William Stephen Leach,* examined.

[Adjourned to Friday, at Twelve o'clock.

Friday, 8th June 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON in the Chair.

Sir George Bowyer.	Colonel Gilpin.
Mr. A. W. Peel.	Sir Michael Hicks Beach.
Mr. Acland.	Mr. Neate.
Captain Vivian.	Colonel Napier Sturt.
Mr. Yorke.	

Mr. *William Stephen Leach,* further examined.

[Adjourned to Tuesday, at Twelve o'clock.

Tuesday, 12*th June* 1866.

MEMBERS PRESENT:

Mr. Milner Gibson in the Chair.

Mr. A. W. Peel.	Mr. Yorke.
Mr. Acland.	Lord Eustace Cecil.
Sir George Bowyer.	Sir Michael Hicks Beach.
Captain Vivian.	Mr. Neate.
Colonel Napier Sturt.	

Mr. *Nathaniel Beardmore*, examined.

[Adjourned to To-morrow, at Twelve o'clock

Wednesday, 13*th June* 1866.

MEMBERS PRESENT:

Mr. Milner Gibson in the Chair.

Captain Vivian.	Lord Eustace Cecil.
Mr. Yorke.	Sir Michael Hicks Beach.
Mr. A. W. Peel.	Mr. Neate.
Mr. Acland.	Sir George Bowyer.
Colonel Napier Sturt.	

Petition of Oxford Local Board of Health, read.

Counsel:—Mr. *Macnamara.*

Agents:—Messrs. *Baxter, Rose, & Co.*

Mr. *Nathaniel Beardmore*, further examined.

Mr. *Robert Rawlinson*, examined.

Mr. *Stephen Wm. Leach*, and Mr. *James Castle*, were further examined.

[Adjourned to Friday, at Twelve o'clock.

Friday, 15*th June* 1866.

MEMBERS PRESENT:

Mr. Milner Gibson in the Chair.

Mr. Acland.	Sir George Bowyer.
Colonel Napier Sturt.	Mr. Yorke.
Mr. Neate.	Lord Eustace Cecil.
Mr. A. W. Peel.	Sir Michael Hicks Beach.
Captain Vivian.	Colonel Gilpin.

Mr. *Robert Rawlinson*, and Mr. *Stephen Wm. Leach*, were further examined.

Professor *John Thomas Way*, examined.

Mr. *Phinn* stated to the Committee that he had received the following proposal from the Water Companies:—

"Thames Navigation Bill.

"As solicitors to the several Metropolitan Water Companies taking water from the Thames, we are authorised to state that, in consideration of the benefits to be derived from the operations of the Act, and, more particularly, by restrictive clauses and amendments, to the satisfaction of the Water Companies, being inserted in the Bill to prevent all sewage, &c., flowing into the Thames, the Water Companies are prepared to pay the sum of One thousand pounds per annum each, irrespective of what they now pay. Our object in making this proposal is to save further expenditure to all parties; and if the arrangement is to be carried out, it should be prior to the meeting of the Committee to-morrow:

"*Few & Co.*,
Solicitors to the Chelsea Waterworks.

"*Bell, Steward, & Lloyd*,
Lambeth Water Works.

"*Bailey, Shaw, Smith, & Bailey*,
West Middlesex Waterworks.

"*Hargrave, Fowler, & Blunt*,
Solicitors to Southwark and Vauxhall Water Companies,
and Grand Junction Waterworks Company."

Room cleared—The Committee deliberated, and decided, that having considered the proposal of a contribution of 1,000 *l.* a year by each of the Water Companies, in addition to their present payment, they are prepared to accept it.

Parties called in, and informed thereof.

Mr. *John Thornhill Harrison*, examined.

[Adjourned to Monday, at Twelve o'clock.

Monday, 18*th June* 1866.

MEMBERS PRESENT:

Mr. Milner Gibson in the Chair.

Sir George Bowyer.	Lord Eustace Cecil.
Mr. Yorke.	Captain Vivian.
Mr. A. W. Peel.	Colonel Gilpin.
Mr. Acland.	Sir Michael Hicks Beach.
Colonel Napier Sturt.	Mr. Neate.

Mr. *Macnamara* was heard in support of the Petitions of the Mayor, &c. of Borough of Reading, the Oxford Local Board of Health, and the Corporation of Abingdon, against the Bill.

Mr. *Thomas Rogers*, examined.

[Adjourned to To-morrow, at Twelve o'clock.

Tuesday, 19th June 1866.

MEMBERS PRESENT:

Sir GEORGE BOWYER in the Chair.

Mr. A. W. Peel.	Mr. Yorke.
Mr. Neate.	Captain Vivian.
Mr. Acland.	Colonel Napier Sturt.
Lord Eustace Cecil.	Sir Michael Hicks Beach.

Mr. *Thomas Rogers,* further examined.

Mr. *Burke* was heard in support of the Petition of the Metropolitan Board of Works, against the Bill.

Sir *John Thwaites,* and Mr. *Daniel Godfrey,* were severally examined.

[Adjourned to Friday, at Twelve o'clock.

Friday, 22d June 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON in the Chair.

Sir George Bowyer.	Lord Eustace Cecil.
Captain Vivian.	Colonel Gilpin.
Colonel Napier Sturt.	Mr. Neate.
Mr. A. W. Peel.	Mr. Acland.
Mr. Yorke.	Sir Michael Hicks Beach.

In support of the Petition of the Metropolitan Board of Works against the Bill:

Mr. *Joseph William Bazalgette,* and Mr. *William Tite,* a Member of the House, were severally examined.

Mr. *Wilkinson* stated that that closed the case in support of the above Petition.

Room cleared.

Committee deliberated.

Parties called in.

Mr. *Clerk* was heard in support of the Petition of the Conservators of the River Thames, against the Bill.

Captain *Edward Burstal,* R. N., examined.

[Adjourned to Monday, at Twelve o'clock.

Monday, 25th June 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON in the Chair.

Colonel Napier Sturt.	Lord Eustace Cecil.
Captain Vivian.	Sir Michael Hicks Beach.
Sir George Bowyer.	Mr. Acland.
Mr. A. W. Peel.	

In support of the Petition of the Conservators of the River Thames:

Admiral Sir *Frederick Nicholson,* and Mr. *Jonathan Thorp,* were severally examined.

Captain

Captain *E. Burstal*, R.N., further examined.

Mr. *O'Malley* was heard in support of the Petition of Lincoln College, Oxford, against the Bill.

The Rev. *Washbourne West* and Mr. *Daniel Godfrey*, were severally examined.

[Adjourned to To-morrow, at Twelve o'clock.

Tuesday, 26th June 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON in the Chair.

Colonel Napier Sturt.	Captain Vivian.
Sir George Bowyer.	Mr. Neate.
Sir Michael Hicks Beach.	Mr. A. W. Peel.
Lord Eustace Cecil.	Mr. Acland.

Petition of Provost, &c., of Eton College, read.

Counsel:—Mr. *Liddell.*

Agents:—Messrs. *Toogood.*

Mr. *Johnson* was heard in support of the Petition of *P. Ibbotson*, &c., against the Bill.

Mr. *John Evans*, Mr. *Henry Wheeler*, Mr. *James Castle*, and Professor *Edward Frankland*, were severally examined.

Professor *John Thomas Way*, further examined.

Mr. *Thomas Rogers*, further examined by the Committee.

[Adjourned to Thursday, at Twelve o'clock.

Thursday, 28th June 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON in the Chair.

Colonel Gilpin.	Mr. A. W. Peel.
Mr. Acland.	Captain Vivian.
Colonel Napier Sturt.	Sir Michael Hicks Beach.
Sir George Bowyer.	Mr. Neate.

Mr. *Lopez* was heard in support of the Petition of Millowners, &c., in Upper District of Thames, against the Bill.

Mr. *Charles Harrington Witherington*, examined.

Mr. *Liddell* was heard in support of the Petition of the Provost, &c., of Eton College, against the Bill.

Mr. *Smith* was heard in support of the Petition of A. K. B. Granville, against the Bill.

Mr. *Phinn* was heard in reply on the whole case.

[Adjourned to To-morrow, at Twelve o'clock.

Friday, 29th June 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON in the Chair.

Sir George Bowyer.	Sir Michael Hicks Beach.
Mr. Acland.	Lord Eustace Cecil.
Mr. A. W. Peel.	Mr. Neate.
Captain Vivian.	

Petition of Freighters of Coal, &c. on the Thames, read.

Counsel:—Mr. *Liddell* and Mr. *Coates.*

Agents:—Messrs. *Dyson & Co.*

Mr. *Phinn* was further heard in reply on the whole case.

Room cleared.

Committee deliberated.

Preamble read 2° and amended. Question, "That the Preamble, as amended, is proved," put, and *agreed to.*

The Committee agreed to the following Resolutions:—

1. That the Upper Navigation Commissioners should be discontinued.

2. That there should be one governing body for the Thames above and below Staines.

3. That the governing body should be the Conservators of the River Thames, with a modification of their constitution.

4. That above Staines the Conservators should have the like powers as they have below Staines, and also the powers now belonging to the Upper Navigation Commissioners; but in order to facilitate land drainage between Cricklade and Oxford, provision should be made, allowing an appeal to the Board of Trade in the event of the Conservators withholding their consent, in any case in which such consent is requisite under "The Land Drainage Act, 1861."

5. That five members should now be added to the body of the Conservators.

6. That of these four should be elected, as proposed in the Bill.

7. That the remaining one should be appointed by the Board of Trade.

8. That the proposal of the Five Metropolitan Water Companies, taking water from the Thames (dated 14th June 1866), should be accepted.

9. That it is not at present necessary to raise funds by a rate or tax on riparian proprietors, or on towns situate on the Thames.

10. That it is expedient that stringent provision be made, as soon as practicable, for preventing the pollution of the Thames above the Metropolis, and that for that purpose provision should be made in the Bill in relation to the district to which the Bill applies, namely, between Cricklade and Staines; and that provision should be further made requiring the Conservators to apply next Session for like powers in relation to the Thames between Staines and Teddington.

11. That with respect to paper makers, the provisions for preventing pollution should be restrained from being put into operation until the expiration of six months after the passing of the Act, except as to dry refuse.

Parties called in and informed of the above Resolutions.

The Committee proceeded with the Clauses of the Bill.

Clauses 1 and 2 read, and *agreed to.*

Clauses 3 to 23, *postponed.*

Clauses 24, 25, 26, read, and *agreed to.*

Clause 27, "Repeal of Parts of Upper Navigation Acts," read.

Mr.

Mr. *O'Malley* was heard against the Clause on behalf of Petition of Lincoln College, &c.

Mr. *Phinn* was heard in answer, in support of the Clause.

Mr. *O'Malley* was heard in reply.

[Adjourned to Monday, at Twelve o'clock.

Monday, 2d July 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON, in the Chair.

Mr. Acland.	Lord Eustace Cecil.
Colonel Napier Sturt.	Sir George Bowyer.
Mr. Neate.	Captain Vivian.
Mr. A. W. Peel.	Colonel Gilpin.

On Clause 27, Mr. *O'Malley* was further heard in reply, and proposed an Amendment to the Clause.

Mr. *Clerk*, on behalf of the Conservators of the River Thames, was heard against the proposed Amendment.

Mr. *Reilly*, on behalf of the Promoters of the Bill, was heard against the proposed Amendment.

Room cleared.

Committee deliberated.

The Committee decided, That Mr. Danbe is entitled to compensation for the value of his tolls, and that the said tolls should be valued as they stood, before notice was given of this Bill, by arbitration:

That the compensation should be charged on the surplus arising from the actual Navigation Tolls, after paying all expenses of maintenance, with power to Conservators to redeem the same; and that the Bill be amended accordingly.

Parties called in and informed thereof.

Clause 27, *agreed to.*

Clause 28, read, and *agreed to.*

Clauses 29 to 41, *postponed.*

Clause 42 read, and *agreed to.*

Mr. *Reilly* proposed MS. Clause 42 A: "Provision as to drawing down of water for repairs, &c., of mills."

Clause 42 A, read.

Mr. *Lopez* was heard against the clause, on behalf of the millowners in the Upper District.

Clause 42 A, *added to the Bill.*

Mr. *Reilly* proposed MS. Clause 42 B.: "Provision as to passing through disused portions of Navigation."

Clause 42 B, read, and *added to the Bill.*

Clause 43 read, amended, and *agreed to.*

Mr. *Reilly* proposed MS. Clause 43 A: "Provision for control by Water Companies of Works of Conservators."

Clause 43 A, read.

Mr. *Clerk*, on behalf of the Conservators of the Thames, was heard against the Clause.

Mr. *Toulmin Smith*, on behalf of the Lambeth Waterworks Company, was heard in support of the Clause.

Clause 43 A, *added to the Bill.*

MS. Clauses 43 B, 43 C, and 43 D, read, and *added to the Bill.*

Mr. *Coates*, on behalf of R. Campbell, proposed MS. Clause 43 E.

Clause 43 E, read, and *added to the Bill.*

Clauses 44 and 45, read.

Mr. *Liddell*, on behalf of Freighters of Coal, &c., proposed an Amendment to the Clauses.

Clause 44, *agreed to.*

Clause 45 amended, and *agreed to.*

Clause 46 read, and *agreed to.*

MS. Clauses 46 A, 46 B, 46 C, and 46 D, read, and *added to the Bill.*

[Adjourned to To-morrow, at Twelve o'clock.

Tuesday, 2d July 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON, in the Chair.

Sir George Bowyer.	Mr. A. W. Peel.
Colonel Napier Sturt.	Captain Vivian.
Mr. Neate.	

Clause 47 read, amended, and *agreed to.*

Clause 48 read, "Notice for discontinuance of existing sewerage works."

Mr. *Liddell*, on behalf of Provost, &c., of Eton College, was heard against the Clause.

Mr. *Macnamara*, on behalf of Oxford Local Board of Health, and the Corporations of Reading and Abingdon, was heard against the Clause.

Mr. *Lumley Smith*, on behalf of P. Ibbotson, &c., was heard against the Clause.

Clause 48, *postponed.*

Clause 49 read, amended, and *agreed to.*

Clause 50 read, "Defences allowed to persons receiving notice."

Mr. *Phinn* proposed to strike Clause 50 out of the Bill.

Mr. *Johnson*, on behalf of P. Ibbotson, &c., was heard against the proposal, and proposed an amendment to the Clause.

Mr. *Macnamara*, on behalf of the Corporation, was also heard against the proposal.

Mr. *Phinn* was heard against the proposed amendment.

Mr. *Johnson* was heard in reply.

Question, "That Clause 50 stand part of the Bill," put, and *negatived.*

Clauses 51, 52, 53, 54, 55, read, amended, and *agreed to.*

Clause 56, *postponed.*

Clauses 57, 58, 59, read, amended, and *agreed to.*

Clauses 60, 61, read, and *agreed to.*

Clause 62, "Charge on tolls of commissioners, mortgage debt," read.

Mr. *Thomas Pring*, examined.

Clause 62, amended, and *agreed to.*

Clauses

Clauses 63-70 read.—Amendments made.—Clauses, as amended, *agreed to.*

Clause 71 read.—Question, "That this Clause stand part of the Bill?" put, and *negatived*

Clause 72, read, amended, and *agreed to.*

Several MS. Clauses brought up, and *added to the Bill.*

[Adjourned to To-morrow, at Twelve o,clock.

Wednesday, 4th July 1866.

MEMBERS PRESENT:

Mr. MILNER GIBSON, in the Chair.

Sir George Bowyer.	Mr. Acland.
Sir Michael Hicks Beach.	Lord Eustace Cecil.
Captain Vivian.	Mr. A. W. Peel.
Mr. Neate.	Colonel Napier Sturt.

Clause 40, read.

Mr. *Liddell,* on behalf of Provost, &c., of Eton College, proposed an amendment to the Clause.

Mr. *Stephen William Leach,* further examined.

Mr. *Toulmin Smith,* on behalf of the Lambeth Waterworks Company, proposed an amendment to the Clause.

Mr. *S. W. Leach,* further examined.

Clause 40, amended, and *agreed to.*

Clause 41, read, and *agreed to.*

Clause 48, read, and *agreed to.*

Clause 56, read, and *agreed to.*

The Committee went through the postponed Clauses of the Bill, and made several amendments thereunto.

Mr. *Reilly* proposed a MS. Clause, "Reservation to millers of fishing rights under certain circumstances."

Clause brought up, and read.

Mr. *Sargood,* on behalf of the Conservators, was heard against the Clause.

Colonel *Thomas Peers Williams,* a Member of the House, examined.

Question, "That this Clause be added to the Bill," put, and *negatived.*

Several MS. Clauses brought up, and *added to the Bill.*

Ordered to Report, together with the Minutes of Evidence.

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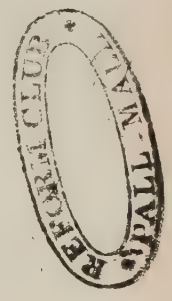
MINUTES OF EVIDENCE.



Monday, 4th June 1866.

MEMBERS PRESENT:

Mr. Acland.
Sir Michael Hicks Beach.
Sir George Bowyer.
Lord Eustace Cecil.
Mr. Milner Gibson.
Colonel Gilpin.
Mr. Neate.
Mr. A. W. Peel.
Colonel Napier Sturt.
Captain Vivian.
Mr. Yorke.

THE RIGHT HON. THOMAS MILNER GIBSON, IN THE CHAIR.

4 June 1866.

Mr. *Phinn*, Q.C., and Mr. *Reilly*, appeared as Counsel on behalf of the Promoters.

Messrs. *Wyatt & Metcalfe* appeared as Agents.

The following Petitions against the Bill were read:

The Petition of the Chancellor, Warden, and Scholars of the University of Oxford.

No person appeared in support of the Petition.

The Petition of the Commissioners of the Thames and Isis Navigation.

No person appeared in support of the Petition.

The Petition of E. Ibotson and others.

Mr. *Johnson*, Q.C., and Mr. *Lumley Smith*, appeared as Counsel in support of the Petition.

Messrs. *Loch & Maclaurin* appeared as Agents.

The Petition of the President and Scholars of St. John Baptist College, in the University of Oxford.

Messrs. *Baxter & Co.* appeared as Agents in support of the Petition.

The Petition of George Charles Cherry.

Messrs. *Dorington & Co.* appeared as Agents in support of the Petition.

The Petition of the Conservators of the River Thames.

Messrs. *Clerk & Sargood* appeared as Counsel in support of the Petition.

Messrs. *Wyatt & Metcalfe* appeared as Agents.

The Petition of R. Campbell.

Mr. *W. Dyson* appeared as Agent in support of the Petition.

The Petition of the Mayor, Aldermen, and Burgesses of the Borough of Abingdon.

Messrs. *Dale & Stretton* appeared as Agents.

The Petition of the Warden or Rector, and Scholars of Lincoln College, Oxford, Robert Danbe and Thomas Fairbrother.

Messrs. *Dale & Stretton* appeared as Agents in support of the Petition.

The Petition of The Rev. Walton Kitching.

Messrs. *Dorington & Co.* appeared as Agents in support of the Petition.

4 June 1866.

The Petition of A. Kerr B. Granville.
Mr. *Stephens* appeared as Agent in support of the Petition.

The Petition of Walter Lawrence Lawrence.
Messrs. *Marriott & Jordan* appeared as Agents in support of the Petition.

The Petition of the Southwark and Vauxhall Water Company.
Mr. *Holland* appeared as Counsel in support of the Petition.
Messrs. *Pritt & Co.* appeared as Agents.

The Petition of the Grand Junction Waterworks Company.
Mr. *Holland* appeared as Counsel in support of the Petition.
Messrs. *Pritt & Co.* appeared as Agents.

The Petition of Ralph Ward Jackson.
Messrs. *Marriott & Jordan* appeared as Agents in support of the Petition.

The Petition of the Governor and Company of Chelsea Waterworks.
Mr. *Brett*, Q.C., appeared as Counsel in support of the Petition.
Messrs. *Dorington & Co.* appeared as Agents.

The Petition of the Company of Proprietors of Lambeth Waterworks.
Mr. *Toulmin Smith* appeared as Counsel in support of the Petition.
Messrs. *Bell, Steward, & Lloyd* appeared as Agents.

The Petition of the Corporation of Rochester.
No person appeared in support of the Petition.

The Petition of the Mayor, Aldermen, and Burgesses of the Borough of Reading.
Mr. *Macnamara* appeared as Counsel in support of the Petition.
Messrs. *Pritt & Co.* appeared as Agents.

The Petition of the Mill Owners and Mill Occupiers of the Upper District of the River Thames (signed by H. and M. Allen, William E. Saker, &c.)
Messrs. *Gregory & Co.* appeared as Agents in support of the Petition.

The Petition of the Mayor, Aldermen, and Citizens of Oxford.
No person appeared in support of the Petition.

The Petition of the Mill Owners and Mill Occupiers of the Upper District of the River Thames (signed by Thomas Peeres Williams, &c.)
Messrs. *Dorington & Co.* appeared as Agents in support of the Petition.

The Petition of the Metropolitan Board of Works.
Mr. *Burke*, Q.C., and Mr. *Wilkinson*, appeared as Counsel in support of the Petition.
Messrs. *Dyson & Co.* appeared as Agents.

The Petition of John Loder Symonds.
No person appeared in support of the Petition.

Mr. *Phinn* opened the case on behalf of the Promoters.

Mr. *Thomas Hedges Graham*, called; Examined by Mr. *Reilly*.

Mr. *T. H. Graham.*

1. ARE you the General Clerk of the Upper Navigation Commissioners?—Yes.

2. That is the statutory name given to your office?—Yes.

3. Are your duties those of a secretary and legal adviser to the Commissioners?—Yes.

4. I believe you have been in office about four years?—Yes.

5. Did your father fill the office before you?—He held it for 22 years before me; I assisted him the latter part of his time a great deal.

6. Will you refer to the second paragraph of the Preamble of the Bill; are those Acts which are there referred to and enumerated in the Schedule, the Acts under which the Upper Navigation Commissioners perform their duties?—Yes.

7. What is the extent of the jurisdiction of the Upper Navigation Commissioners?—From Cricklade, in Wiltshire, to Staines.

8. Does

Mr. *T. H. Graham.*

4 June 1866.

8. Does the jurisdiction of the Conservators of the Thames begin at Staines?—It begins at Staines.

9. Do you know where the tide runs up to?—To Teddington.

10. Is that some distance below Staines?—Yes, I believe it is.

11. Do you know how far?—I do not know the distance.

12. Will you turn to the next paragraph of the Preamble of the Bill, page 2; is that a correct statement of the constitution of the present body of Commissioners?—Yes.

13. Is it the fact that those Commissioners who are qualified by virtue of holding land, are not necessarily resident?—If the land is resident within the counties they are not necessarily resident within the counties; those gentlemen who qualify for land may reside anywhere, so long as the land is within the county specified; those who qualify for personal property must reside within the counties of Wiltshire, Gloucester, Berks, or Buckingham.

14. The residents in the counties are qualified by holding lands of 100 *l.* a-year in any part of Great Britain, I believe?—Yes.

15. Or being heirs-apparent of persons holding land of 200 *l.* a-year in any part of Great Britain?—Yes.

16. How many are the Commissioners in number?—I have no means of knowing, but I should think there are 600 or 700.

17. Sir *G. Bowyer.*] Those who have qualified?—Who may qualify or act immediately; any Member of Parliament may qualify and act immediately.

18. Mr. *Neate.*] How many have qualified?—It is impossible to tell, because I do not know the deaths.

19. Mr. *Reilly.*] Is there a register kept of the Commissioners who qualify?—There is a book in which they enter their names when they qualify.

20. Are they obliged to take an oath of qualification before doing any act?—Yes.

21. Of course a record is kept in that book?—Yes, each district clerk takes the oaths at the district meeting; therefore there is not a perfect register of the oaths.

22. Is there no return made to the general clerk of cases in which oaths have been taken?—They are not always returned to me.

23. The jurisdiction of the Commissioners is divided into five districts, is it not?—It is.

24. Does the first of those districts commence at Staines?—Yes.

25. And extends to Boulter's Lock?—It extends to Boulter's Lock.

26. The second extends to Maple Durham?—Yes.

27. Does the third extend to Shillingford?—Yes.

28. And the fourth to Oxford?—Yes.

29. And the fifth to Cricklade?—Yes.

30. The Commissioners act, do they not, by a committee?—They act by a committee of 15.

31. How is that committee elected?—Three are appointed for each district in the month of October.

32. Do those 15 Commissioners represent the five districts, three for each district?—Yes; they hold quarterly meetings.

33. The powers of that committee appear on the face of the Acts, do they not, to be limited in their character?—They are subject to the control of the whole body of Commissioners.

34. Is it not the case that the committee acts entirely ministerially?—Entirely.

35. They cannot originate any work?—They originate every work, but it is subject to the control of the general body.

36. When they have considered that a work is necessary after a survey of the river, they report to the general body?—They report to the general body at a general meeting, and that general body may confirm or reject what they have done.

37. But the committee of 15 have no power, have they, to spend money?—They spend it subject to the control of the body generally; it is seldom disputed.

38. Does not the Act say in terms, that they shall report on the proposed expenditure, and that the general body shall approve of it?—That is the course taken.

Mr. *T. H. Graham.*

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39. Are these the terms of the Act in Section 18—35 Geo. 3., cap. 106; that the committee shall "proceed in the execution of such works, and from time to time report the state, condition, and progress thereof to the general meeting of the Commissioners, and to report, examine, and certify the reasonableness of all bills and accounts for the costs, charges and expenses occasioned thereby, or incurred therein, which, after being allowed by the said Commissioners at any general meeting, shall be paid and discharged"?—That is so.

40. Does it not appear from that, that the Commissioners have no power in their own right to spend money?—It is the fact that they have not.

41. Consequently, is it not your opinion that the powers of that committee are of an extremely limited character?—Yes.

42. Are the Commissioners incorporated?—No, they are not.

43. Have you considered whether that want of incorporation exposes them to any liability in their personal or individual character?—I have taken the opinion of counsel upon the point.

44. Have you been advised that, to some extent, the Commissioners are personally liable for their acts?—Yes.

45. Have you been advised that the probability is, that each of the Commissioners would be held personally liable for orders which he had himself given, orders which he had either given or ratified?—Yes.

46. Have you been told that the question as to the degree of liability would not be a simple one, and that difficult questions would probably arise?—That is as to the bondholders.

47. I mean with regard to the liability of the Commissioners themselves?—Yes; those who ordered anything would be liable for it.

48. Captain *Vivian.*] Do I understand you to state that an individual Commissioner giving any order, would be personally liable for his order?—Yes, the Commissioners not being a Corporation.

49. Mr. *Reilly.*] If the Commissioners were incorporated they would give orders as a Corporation under their corporate seal, and their corporate property would alone be responsible; is that the view you take?—That is so.

50. Has that state of things a tendency to paralyse the action of the Commissioners?—It has; we have discontinued our works in consequence of that opinion.

51. Have any threats of actions been made against the Commissioners with regard to their works?—No, not with regard to their works; with regard to the bond debt.

52. Have many actions been threatened as to the effect of their treatment of the river, on the banks, for instance?—We have been threatened by a mill-owner with an action for not keeping the works in order at our Pound Lock.

53. Have you been advised as to the liability of the Commissioners individually to such actions?—I have not been advised upon that point.

54. What are the powers generally of the Commissioners with regard to the bed of the river; have they any power to dredge?—They have power to dredge, but they have no power over the soil except for the purpose of dredging for navigation purposes.

55. Are their powers, in fact, limited altogether to navigation objects?—Entirely.

56. Is it the case that they are not called upon to consider at all the question of land drainage?—Not at all; it is entirely for navigation purposes.

57. Or the preservation of the banks of the stream?—No.

58. Are you acquainted with the condition of the works under the control of the Commissioners?—Generally, I am; I know that they are in a very bad state.

59. Do you know the weir called the Bell Weir?—I have not seen it very lately; I have not seen it for two years.

60. Has the traffic on the upper navigation greatly fallen off of late years?—Yes, it has.

61. To what do you attribute that falling off?—To the competition of railways in a great measure, and to our being unable to alter our rates so as to compete with the railways.

62. What has been the cause of your being unable to alter your rates?—We have not been able to reduce our rates, and we have had the old lockowners' tolls also as a burthen upon us.

63. Does

63. Does the title of the old lockowners to their tolls originate under the first of the Acts of the Upper Navigation?—It is conferred by the first of the Acts.

64. Will you turn to the first of the Upper Navigation Acts, which is the 24th of Geo. 2, passed in the year 1751. Does the Preamble of that Act state that "the rivers of Thames and Isis have time out of mind been navigable from the City of London to the village of Bercott, in the county of Oxford, and from the city of Oxford, westward, beyond Lechlade, in the county of Gloucester"?—Yes.

65. It then proceeds, does it not, to recite the Act of the 21st of James I., for making the river navigable from Bercott to Oxford?—Yes.

66. Does the Preamble then go on to recite that "Divers abuses have heretofore been and still are committed by the owners of the several towing-paths and other passages on the banks of the said river, and by the owners of the locks, weirs, turnpikes, dams, flood-gates, and other engines in and upon or near adjoining to the said rivers, and also by the several bargemasters and their servants navigating thereon, by reason whereof and other exactions the price of water-carriage on those rivers hath of late years been very much raised"?—Yes.

67. Then for preventing those abuses and exactions the Act proceeds, does it not, to constitute a body of Commissioners, and to empower them, among other things, to make "Orders and constitutions for settling and ascertaining reasonable rates and prices to be taken from the owners of all barges, boats, and vessels, for the use and exercise of all the towing-paths, gates, and barges, either by men or horses, as they are now used or shall be used at the discretion of the said Commissioners, by the tenants or occupiers of all locks, weirs, bucks, winches," and so forth?—Yes.

68. Does not that clause proceed further to describe those cases in which the tolls are to be taken as cases in which help and assistance is given to barges, boats, or vessels in their passage on the river?—Yes.

69. Does it not appear from that, that at that period the tolls taken by the lockowners were recognised as being taken for the help and assistance which the barges, boats, or vessels received thereby on their passage along the river?—Yes.

70. Now will you turn to the last section of that Act, section 26; does not that, among other things, repeal the previous Act of the 6th and 7th William 3?—Yes.

71. Have you looked at that Act?—I have not.

72. The Preamble of it is in these words: "Whereas the rivers of Thames and Isis have time out of mind been navigable from the City of London to the village of Bercott, in the county of Oxford, and for divers years last past from the said village of Bercott westward, somewhat farther than Lechlade, in the county of Gloucester; and whereas for the benefit and conveniences of the navigation, there have been and are divers locks, weirs, bucks, winches, turnpikes, dams, flood-gates, and other engines in, upon, or near adjoining to the said rivers; the tenants or occupiers whereof anciently took, and still ought to take, a moderate and reasonable price from the owners of all barges, boats, or other vessels having occasion to make use of the same, or of their assistance for, or in their passage." Does not that show that at that time the lockowners rendered some assistance to the barges and vessels in their passage?—Yes.

73. And that in consideration of that assistance these tolls were authorized?—Yes.

74. Does it not appear from the subsequent clauses that the Commissioners under that first Act of 1751, did make such orders and constitutions regulating the tolls to be paid by the old lockowners?—Yes; I have no doubt they did.

75. Then the second Act of 11 Geo. 3, was the first which authorized the Commissioners to execute any works on the river, was it not?—It was.

76. The first Act merely enabled them to make regulations for the better management of the river and the traffic upon it?—Yes.

77. The second Act authorised them to make those pound locks which are now in existence, did it not?—Yes.

78. Did it not, in section 9, contain a further provision with regard to the tolls payable to the old lockowners: "And be it further enacted by the

Mr. *T. H. Graham.*
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authority aforesaid, that it shall and may be lawful for the said Commissioners, or any seven or more of them at any general meeting, or for any three or more of them at any district meeting, to settle the price to be paid for the passage of barges or other vessels, so as such price, so far as regards the locks now in being, be not less than the present owners or occupiers of such locks are now entitled to take and receive by virtue of any former Act, or any order made by the Commissioners acting under or by virtue thereof"?—Yes.

79. That is the same section which contains a power by the Commissioners to oblige owners or occupiers of locks to come in and repair the locks and weirs now on the river?—Yes.

80. Does it not contain this further power: "And the said Commissioners, or any seven or more of them at any general meeting, or any three or more of them at any district meeting, shall have power by a written order signed by them, and directed to the persons concerned, to oblige the owners or occupiers of locks to keep in repair the several locks and weirs now in the said rivers; and for non-compliance with such order, after ten days' notice the said Commissioners or any three or more of them, whether they signed the same or not, are hereby empowered to repair such locks and weirs, and to levy the expense by distress and sale of the offenders' goods and chattels; and the said Commissioners or any seven or more of them at any general meeting, or any three or more of them at any district meeting, are hereby empowered to fix a mark or marks at each lock or weir below or above which mark or marks no owner or occupier of any lock, weir, or mill, shall knowingly or designedly let the water fall or rise, unless he is authorised thereto by two Commissioners under their hands," in case of repairs being wanted?—Yes.

81. It then proceeds, does it not, to impose a penalty upon forfeiture?—Yes.

82. The next section contains, does it not, the proviso which has been referred to in the opening, enabling the owner or occupier of any mill to draw down the water without the authority of the Commissioners for the repair of such mill, or any flood-gates or water-courses belonging thereunto, and for the purpose of cleansing the mill-stream?—Yes.

83. Then does not the same section contain a provision with regard to rights of the fishery owners?—Yes.

84. That is the right, is it not, of persons "having a right or privilege to fish with nets or bucks in any part of the said rivers, and to draw down the waters for that purpose, to retain, possess, and enjoy the said right and privilege of fishing at all seasonable times of the year, and drawing down the water, doing thereby no damage or prejudice to the navigation, and causing thereby no obstruction or hindrance to the boats, barges, or lighters, on the said rivers; anything in this Act contained to the contrary notwithstanding"?—Yes.

85. Have you considered the paragraph of the Preamble with reference to those fishery rights?—Yes.

86. At the bottom of page 3 it recites, does it not, "And whereas certain persons have or claim a right or privilege to fish with nets or bucks in parts of the Thames above Staines, and to draw down the water of the river for that purpose, to the great prejudice of the navigation, and it is expedient that any right of drawing down water for that purpose should be abolished"?—That power is no doubt prejudicial to the navigation.

87. That passage of the preamble does not say that it is expedient that the right of fishing should be in any way interfered with?—No, the right of drawing down water.

88. The corresponding clause of the Bill, clause 27, repeals, does it not, so much of the Act of 1771, section 10, as empowers any person to draw down water for that purpose?—Yes.

89. That leaves the right of fishing itself wholly untouched?—I presume so.

90. Now you have stated that the traffic on the river has greatly diminished; is the statement in the Preamble also correct, that the receipts and tolls have greatly diminished?—Yes, that is the fact.

91. What were the tolls received in 1845?—Upwards of 14,000*l.*

92. What were they in 1864?—They were about 3,000*l.*

93. Were they not 3,057 *l.* 6*s.* 8*d.*?—That is the amount.

94. Lord *Eustace Cecil.*] What were they in 1865?—The total receipts were 3,169*l.* 16*s.* in 1865.

95. Mr. *Reilly.*] That is the total received at the pound locks?—Yes.

96. Have

96. Have the Commissioners any other sources of income except those tolls? —Very small sources; they have some small rentals, amounting to 16 *l.* only; then there is an item of sundries, which amount to 101*l.* 14*s.* 7*d.*

97. That makes the total of their income from all sources, how much?—£. 3,287. 10*s.* 7*d.*

98. What was the amount of their expenditure in the same year, 1865?—£.2,813.7*s.* 1*d.*

99. That includes, does it not, the outlay for salaries of officers, salaries to pound keepers, towing-path rents, rents of wharves and warehouses, old locks, &c., rates and taxes, and expenditure for timber, ironwork, horsing boats, and cartage of materials, and so on?—Yes.

100. And all the miscellaneous expenses?—Yes.

101. What was the deficit in that year?—We had a balance in hand at that time of 586*l.*; but that has been expended.

102. There was a balance in the treasurer's hands of 586 *l.* 17 *s.* 1 *d.*?—Yes.

103. Within that period which you have given of 20 years, had there been a reduction of tolls? There was a reduction of 10 per cent.

104. In the year 1856, did the Commissioners reduce the tolls 10 per cent.?—Yes.

105. Had the Commissioners to lay out considerable sums of money in the preservation and repair of locks and works?—There were constant repairs required.

106. How many locks are there under their control; are there not 35?—Thirty-five, I believe, is the number.

107. How many miles of navigation are there?—One hundred and seven miles

108. Are their accounts audited in any way?—They are passed at a general meeting.

109. Are they required by their Acts to lay their accounts annually before the Houses of Parliament?—They are.

110. Do they do so?—They do.

111. Have the Commissioners attempted to make arrangements which would bring increased traffic to the river?—They have attempted to get the old lock-owners to reduce their tolls, and also to make a through toll or one through payment; instead of paying at each pound lock to make one payment for the whole passage.

112. Did the lockowners, as a body, refuse to join in any such arrangement?—As a body they did not; one or two of them refused; and the consent of the majority was given on the understanding that we obtained the consent of the whole.

113. Sir *G. Bowyer.*] Did they give any reason for their refusal?—No, I think not; they said their tolls were sufficiently low already, and they could not further reduce them.

114. That was the reason they gave?—There was no other reason than that, I believe.

115. Mr. *Reilly.*] Are they entitled to exactly the same amount of toll as the Commissioners?—No, their tolls vary.

116. How are they arranged?—They take so much for every five tons; but they are entitled to take upon the whole tonnage of the barge, irrespective of the actual quantity which they carried.

Tuesday, 5th June 1866.

MEMBERS PRESENT:

Mr. Acland.	Mr. Neate.
Sir Michael Hicks Beach.	Mr. A. W. Peel.
Sir George Bowyer.	Colonel Napier Sturt.
Lord Eustace Cecil.	Captain Vivian.
Mr. Milner Gibson.	Mr. Yorke.
Colonel Gilpin.	

THE RIGHT HON. THOMAS MILNER GIBSON, IN THE CHAIR.

The Petition of the West Middlesex Waterworks Company against the Bill was read.

Mr. *Bailey* appeared as Counsel in support of the Petition.

Messrs. *Pritt & Co.* appeared as Agents in support of the Petition.

Mr. *Thomas Hedges Graham*, recalled; further Examined by Mr. *Reilly*.

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117. WE were, at the rising of the Committee, on the case of the old lock-owners; the old locks appear to have been originally passages in weirs connected with mills, do they not?—They were.

118. That is to say, a millowner constructed a weir or dam across the river, and kept a passage in some part of that weir to allow the boats to pass through?—That is so.

119. Then the original system upon which the navigation was conducted appears to have been that the water was let down from the upper reach, so as to bring it nearly on a level with the lower reach, when a boat intended to pass; is that so?—That was so; and they were drawn up by means of winches.

120. Through this passage, which was left in the weir or dam, the boats were hauled up by main force; that is to say, by men and horses, by means of winches?—Yes.

121. That involved, did it not, considerable loss of water?—That involved a great loss, because the upper reach had to be reduced nearly to the same level as the reach below.

122. That, of course, was a great injury to the miller, was it not?—It was; it took away his supply for the working of his wheels.

123. It appears also from those Acts, does it not, to which we have referred, that the owners of these passages through the weirs provided some assistance by means of the winches?—Yes; they provided the assistance of the winches and charged toll also, in some cases.

124. These tolls appear, then, to have originated in services rendered by the lockowners to the traffic?—Yes.

125. When the pound locks were established by the Commissioners, those through weirs ceased to be used, did they not?—Yes; the pound locks were substituted for them.

126. Then, on that being done, neither of the grounds on which the old lock-owners claimed tolls remains?—No.

127. That is, they neither draw down the water, nor do they supply any assistance to the boats in their passage?—They left very little water comparatively; they left merely the water which was between the two double gates, 130 feet was the length between the two pound locks instead of the whole reach of water.

128. They left merely that quantity of water which was included between the two gates and the pound locks?—That was so.

129. Instead of, as under the old system, of leasing a considerable part of the water of the upper reach?—Yes.

130. But, at the same time, the tolls were continued under the authority of the Acts, were they not?—The Act of the 11 Geo. 3.

131. What section?—The 12th Section.

132. That is the Act of 1771?—Yes.

133. That recites, does it not, "That there are many locks, bucks, weirs, and winches, now in the said rivers, the owners or occupiers whereof are, by virtue of the said recited Act of Parliament, of the 24th year of the reign of his said late Majesty King George the Second, or of some orders made by the Commissioners, acting under the authority thereof, entitled to receive a toll or rate for the passage of boats, barges, and lighters, through such waters and locks, and for the use of such winches"?—That was so.

134. That is the first recital?—Yes.

135. Then it goes on, does it not, "And whereas, by means of the said intended navigation, and the alteration of the course thereof,"—those words refer, do they not, to the pound locks, which the Commissioners were to make under this Act?—Yes.

136. This was the first Act which authorised the Commissioners to execute any works?—Yes.

137. It goes on—"And whereas, by means of the said intended navigation, and the alteration of the course thereof, all the boats, barges, and other vessels will be prevented and obstructed from passing or repassing to or from or through the said weirs and bucks"; these weirs and bucks referred to are the passages through the old weirs?—Yes.

138. Then it provides—"In order, therefore, to make a satisfaction to such owners and occupiers of locks, bucks, weirs, and winches for the damage they may respectively sustain by reason of the said intended navigation, and the alteration of the course thereof, be it further enacted, that from the time of making any alterations in the navigation of the said rivers in pursuance of this Act, whereby any boat, barge, lighter, or other vessel shall be prevented or diverted from passing or repassing to, from, or through either of the said weirs or locks, or from using either of the said bucks or winches, there shall, from thenceforth and for ever thereafter, be paid and allowed, and the Commissioners appointed by or in pursuance of this Act are hereby authorised and empowered and required to pay and allow unto the owner or occupier of every such weir, lock, buck, or winch, for every boat, barge, lighter, or other vessel passing by and not making use of the same, such and the same tolls, rates and duties, clear of all taxes and deductions whatsoever, as such owners and occupiers would have been entitled to have received and taken had such boat, barge, lighter, or other vessel so passing by passed through and made use of such weirs, locks, or winches by virtue of the said recited Act of Parliament, or any order made by the Commissioners acting under or by virtue thereof"?—Yes, that is an enactment.

139. What were those tolls; were they not tolls for every boat and barge passing, and so on?—They were; they varied at different weirs.

140. The Commissioners had power to provide what the amount of those tolls should be?—No, they were to take the same tolls as they did before the passing of the Act—"the same tolls, rates, and duties, clear of all taxes and deductions whatsoever, as such owner or occupier would have been entitled to have received and taken had such boat, barge, lighter, or other vessel so passing by had passed through," and so on.

141. That is, they were to receive the same tolls as if they had actually passed through the passages of the old weirs?—Yes.

142. Although they really went through the pound locks established by the Commissioners?—That is so; by the same Act we are entitled to collect those tolls and pay them over monthly.

143. The Commissioners collect the tolls for the old lock owners, and pay them over monthly, is that it?—Yes.

144. Then it seems to follow from that, does it not, that the old lock owners are at no expense in the collection?—They are not.

145. Then the section goes on to give the old lock owners remedies in case that payment is not made?—Yes.

146. They have, have they not, by the next section, power of examining or

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taking copies of the accounts kept by the Conservators, or on their behalf?—Yes.

147. How many of these old locks are there in existence—how many from Staines to Oxford, and from Oxford to Cricklade?—There are 20 from Staines to Oxford, and above there are many weirs, but I do not know the number.

148. Between Oxford and Cricklade the Commissioners have not made any pound locks?—Yes, they have made two pound locks.

149. But all the other weirs on the river remain in their old condition?—Yes.

150. Do you know the total amount received in lock dues on the river?—In 1864 it was 705 *l.*

151. Have you any account of the receipts at the different locks?—No, I have not; the pound keepers collect them and hand them over directly to the owners; they do not come through our hands at all.

152. They do not come into the funds of the Commissioners at all?—No.

153. As the traffic has increased on the river, these old lock tolls have increased in amount, have they not?—Yes.

154. You have stated to the Committee, that in 1845 the income of the Commissioners themselves was 14,000 *l.*?—It was.

155. Are you able to state what was the income of the old lock owners from their own lock tolls at that time?—No, I am not.

156. The Commissioners had certain borrowing powers under their Acts, had they not?—They had.

157. What was the total amount that they were authorized to borrow?—£. 100,000.

158. How much did they borrow?—I believe they have borrowed nearly the whole of the amount, but they have since paid off a part of it; there is about 88,400 *l.* due; they have borrowed 95,000 *l.*

159. They had borrowing powers to the extent of 100,000 *l.*; they borrowed 95,000 *l.*, and there remains due the sum of 88,400 *l.*?—Yes.

160. Has that been borrowed at an uniform rate of interest?—Part of it was borrowed at 4½ per cent., and part at 5 per cent.

161. How much at 4½ per cent.?—£. 27,900 remains due at 4½ per cent., and 60,500 *l.* at 5 per cent.

162. What was the date of the last borrowing?—1838.

163. Will you refer to the provision of the Acts which prescribes the nature of the security to be given by the Commissioners, is it not section 40 of the Act of the 11th George III.?—Yes.

164. That provides, does it not, "That the Commissioners, or any 11, or more of them, shall and may and they are hereby empowered, from time to time, by any writing under their hands and seals, to assign over the said locks, turnpikes, toll-houses, rates, tolls, and duties arising by virtue of this Act, or any of them, or any part of them, but without prejudice to the owners and occupiers of locks, bucks, weirs, and winches now in the said rivers, or to the tolls payable and to be paid in respect thereof, the costs, charges, and expenses of assigning the same to be borne and paid out of such tolls or duties, for any time or term during the continuance of this Act, as a security or securities for any sum or sums of money to be borrowed by the said Commissioners, to such person or persons, or their trustees, who shall advance and lend the same, to secure the repayment thereof, with legal or less interest"?—Yes.

165. That is made expressly without prejudice to the owners and occupiers of the old weirs?—Yes.

166. They seem to have carefully protected themselves on all occasions; is that act a temporary one?—It is not.

167. Then from that expression, "for any time or times during the continuance of this Act," it might be inferred that the Act was temporary?—It is not so.

168. Have you seen the forms of security given by the Commissioners?—Yes.

169. Are they, in your opinion, securities in accordance with its provisions?—I believe them to be so.

170. The Commissioners were empowered to borrow on parts of the tolls, were they not?—By subsequent Acts.

171. That was for the purpose of the works in different districts, was it not?—Yes, it was for completing the works in different districts.

172. Some of the securities given by them accordingly extend only to the tolls of particular districts, do they not?—That is so.

173. Have you got with you copies of the different forms of security used?—Yes.

174. Will you look at the first of those forms (*handing some documents to the Witness*); is that the form of security issued by the Commissioners in 1771?—Yes, it is dated 8th August 1771.

175. Does that purport to assign all the tolls of the whole navigation?—Yes; "As well those already erected and made upon the said navigation as also those that shall at any time hereafter be erected and made thereon."

[*The Witness delivered in the same, which is as follows*]:

"Know all men, by these presents, that we, Sambrooke Freeman, William Clayton, John Mason, Pennystone Powney, Murrough O'Brien, Henry Corker, George Pengree, Esqs., the Rev. John Cloebury, Doctor in Divinity, William Battie, Doctor of Physic, Mr. William Grover, Mr. Thomas Rickett, and Mr. Joseph Searle, eleven or more of the Commissioners appointed by and for putting into execution an Act of Parliament made in the 11th year of the reign of His present Majesty King George III., intituled 'An Act for improving and completing the navigation of the Rivers Thames and Isis from the City of London to the town of Cricklade, in the County of Wilts, do hereby certify, under our hands and seals, that Henry Isherwood, of Windsor, in the County of Berks, Esq., hath this day lent and advanced unto the Commissioners for putting the said Act into execution the sum of 100 *l.* for the purposes of the said Act, and for the securing the repayment of the said sum of 100 *l.* unto the said Henry Isherwood, his executors, administrators, (or assigns by endorsement hereon) with interest for the same from this day at and after the rate of 4 *l.* 10 *s.* for 100 *l.* for one year, we the said trustees have assigned and set over, and by these presents do assign and set over, unto the said Henry Isherwood, his executors, administrators, and assigns, all and singular the locks, turnpikes, and toll-houses, as well those already erected and made upon the said navigation, as also those that shall at any time hereafter be erected and made thereon: And also all the rates, tolls and duties arising and to be collected, gathered and received at the said locks and turnpikes, or any of them, by virtue of the said Act, or of any the powers or authority thereof, together with the rights, members and appurtenances to the said premises and every part thereof belonging: Provided always, and these presents are upon this express condition, that the assignment hereby made shall be without prejudice to the owners and occupiers of the locks, bucks, weirs, and winches at the time of the passing of the said Act in and upon the said navigation, or to the tolls payable or to be paid in respect thereof. In witness whereof, we, the above-named Commissioners, have hereunto set our hands and seals the 8th day of August, in the year of our Lord 1771.

"*Sambrooke Freeman.*	(L.S.)	*John Cleobury.*	(L.S.)
William Clayton.	(L.S.)	*William Battie.*	(L.S.)
John Mason.	(L.S.)	*William Grover.*	(L.S.)
Pen. Powney.	(L.S.)	*Thomas Rickett.*	(L.S.)
Murrough O'Brien	(L.S.)	*Joseph Searle.*	(L.S.)"
George Pengree.	(L.S.)		

"Witness, *Henry Allnutt*, Attesting Clerk to the
General Meeting of the said Commissioners."

176. Will you turn to the next; is that a copy of the form of security given in 1772?—Yes.

177. Does that apply only to the tolls raised within the second and third districts?—Yes.

[*The Witness handed in the same, which is as follows:*]

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"Know all men by these presents, that we whose names are hereunto subscribed and seals affixed, being eleven of the Commissioners appointed for putting into execution an Act of Parliament made in the 11th year of the reign of His present Majesty King George the 3d, intituled 'An Act for improving and completing the navigation of the Rivers Thames and Isis, from the City of London to the town of Cricklade, in the county of Wilts, and duly qualified according to the directions of the said Act, do hereby certify that William Battie, of Great Marlow, in the county of Bucks, and doctor of physic, hath this day lent and advanced unto the Commissioners for putting the said Act into execution. the sum of 100 *l.* for the purposes of improving and completing the said navigation within the second and third districts of the same. And for the securing the repayment of the said sum of 100 *l.* unto the said William Battie, his executors, administrators, (or assigns by endorsement hereon) with interest for the same, from this day, at and after the rate of 4 *l.* 10 *s.* for 100 *l.* by the year, We, the said Commissioners have assigned and set over, and by these presents do assign and set over unto the said William Battie, his executors, administrators and assigns, all and singular the locks, turnpikes, and toll-houses, rates, tolls and duties arising and to be collected, gathered and received within the said two districts, by virtue of the said Act, or of any of the powers or authorities thereof, together with the rights, members, and appurtenances to the said premises, and every part thereof belonging. Provided always, and these presents are upon this express condition, that the assignment hereby made shall be without prejudice to the owners or occupiers of the locks, bucks, weirs and winches at the time of passing the said Act of in and upon the said navigation, or to the tolls payable or to be paid in respect thereof. In witness whereof, we, the said Commissioners, have hereunto set our hands and seals, the 25th day of December, in the year of our Lord 1772.

"*S. Freeman.*	(L.S.)	*Wm. Clayton.*	(L.S.)
H. S. Conway.	(L.S.)	*H. Isherwood.*	(L.S.)
Geo. Hamilton.	(L.S.)	*M. O'Bryen.*	(L.S.)
Robt. Palmer.	(L.S.)	*Nathl. Newberry.*	(L.S.)
Jas. Hayes.	(L.S.)	*Thos. Rickett.*"	(L.S.)
John Mason.	(L.S.)		

"Witness, *Henry Allnutt*, Attesting Clerk to the Commissioners."

178. Those are samples, the first of the general, and the second of the personal security?—Yes.

179. Has the income been sufficient to keep down the interest on the money borrowed?—No, it has not.

180. Was it gradually reduced?—It was gradually reduced from Christmas 1851, when the Commissioners could only pay interest at 4 per cent.; at Christmas 1852 it was further reduced to 3 per cent.; at Christmas 1853 it was reduced to 2 per cent.; and from Midsummer 1857, 1 per cent. only was paid; from Midsummer 1862 to 1863 one payment of 10*s.* has been made; since then nothing has been paid.

181. So that there is an arrear of interest on the old debt from Christmas 1863?—Yes, from Christmas 1851, in fact, there is an arrear, because we only paid 4 per cent. at that time.

182. Have you had occasion to consider the rights of the creditors under these securities?—Yes.

183. Have you been advised as to their legal position?—We have been advised that they have power to enter into possession of the tolls.

184. There is no suggestion, is there, that the Commissioners are personally liable in respect of this money borrowed?—Not in respect of the money borrowed.

185. The only remedy there would be would be against the property of the Commissioners?—There is no covenant for payment in any of the bonds.

186. Would, then, the only remedy be against the property of the Commissioners?—Yes.

187. Captain *Vivian.*] Can you tell me the whole amount that is due for arrears of interest?—No, I do not know the whole amount.

188. Mr.

188. Mr. *Reilly.*] Have any of the creditors under the securities, threatened to assert their rights against the property?—Yes; I have had threats from two creditors to enter into possession; but, upon seeing them, and pointing out the difficulties they would have to contend with, they stopped.

189. Were you advised that if any creditors entered into possession, they would be entitled to receive and take the tolls to themselves?—Yes.

190. And that would be, would it not, each in order of the date of his own bond?—So we were advised by counsel.

191. There is no provision, is there, in any of these Acts, providing that any creditor entering and receiving the tolls shall hold them for the benefit of other creditors *pari passu*?—No, there is no such provision.

192. And there is no general enactment applicable to the case?—No.

193. So that the position of the bondholders is very different from that of a holder of a turnpike bond?—Yes.

194. Or of a railway debenture?—Yes.

195. There are general enactments, are there not, providing that all creditors in those cases should take *pari passu*?—There are.

196. Then in order to preserve the rights of those creditors who did not enter, resort must be had to the Court of Chancery, must there not?—So we were advised.

197. And that Court would preserve equality among the creditors, no doubt, by appointing a receiver for the benefit of all parties?—Yes.

198. That is among those who had an equal right in order of date?—Yes.

199. Were you not advised that there would be a further difficulty in the case of any suit being instituted in consequence of some of the securities extending only to part of the tolls?—We were.

200. There would be a conflict of interests between those who had securities over all the tolls, and those who had securities over only part?—Yes.

201. Have you been advised that the Court would deal with those cases?—They would marshal the securities so as to secure the parties who had a lesser claim against the arbitrary enforcement of the rights of those who had a greater claim.

202. The Court would, to use a technical expression, "marshal the securities"? Yes.

203. But were you not advised that on the whole there would be a great deal of complication and difficulty in a suit of that character?—Yes.

204. So that the remedies of the creditors under their bonds are attended with great difficulty?—They are.

205. Have you made any attempts on behalf of the Commissioners to settle with any of these bondholders at any time?—Before applying to the Board of Trade last year, I wrote a circular letter to all the bondholders to inquire whether they were willing to postpone their securities to a Government loan, which might be effected, or whether they would take the sum of 5 per cent. for their debt; I had a letter for 103,000 *l.* worth of debt, agreeing to postpone their debt; from persons holding 5,300 *l.* worth of debt, agreeing to take 5 per cent.; and I had dissents to either course by letters from people holding 3,300 *l.*, and I have ascertained from conversation with others holding 9,000 *l.* that they dissented, making together 122,000 *l.* of dissents; from others I received no answers.

206. Had you any letters returned?—Yes, I had several letters returned from the Dead Letter Office.

207. Do you know that some of the persons who now hold are executors and trustees?—Yes.

208. And consequently there would be a difficulty, would there not, in obtaining their consent to any arrangement without the authority of the Court of Chancery?—Yes.

209. Do any of the bondholders lay claim to the land which is held by the Commissioners as being comprised in their security?—They consider they have a claim upon it.

210. Have you been advised that they could obtain a foreclosure or sale of that land?—I have not been advised on that point.

211. Have you formed any opinion on it yourself; if they took possession of their works they would hold of course, would they not, subject to the maintenance of the navigation?—Yes, they must keep the navigation up.

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212. The property will not be very valuable, then, in their hands?—No.

213. It would scarcely be saleable, in fact, would it?—Part of it would be.

214. Has a considerable part of that land which is now held by the Commissioners been bought since 1838?—Yes.

215. That was the date of the last borrowing of the Commissioners?—Yes.

216. Do the creditors claim to have a charge on that land?—They think they are entitled to a charge, inasmuch as it was bought with money which otherwise would have been applied towards payment of their debts.

217. Have you been advised whether they would have any legal title to that land?—I have not been advised, but I do not imagine that they have any legal claim.

218. Do you think they would have a claim in a court of equity?—I have taken no opinion on that point, and I am hardly prepared to say.

219. Are there any other debts due by the Commissioners?—Not to any large extent.

220. Do they owe any arrears of towing-path rents?—About 500 *l.* arrears of towing-path rents; that is the principal debt; there are other current accounts amounting, perhaps, to 500 *l.* or 600 *l.* more.

Cross-examined by Dr. *Adams* (on behalf of St. John's College, Oxford).

221. You have been well acquainted with the district, both below and above Oxford?—Yes.

222. You are aware that above Oxford the river is in a very different state from what it is in below Oxford?—It is.

223. You have been describing the state of the navigation below Oxford as regards pound locks?—Yes.

224. You stated that the old lock owners, whom you consider were weir owners, have now nothing to do for the tolls that they receive; is that so?—Yes.

225. But above Oxford the state of affairs is very different, is it not?—Yes; there they actually pass the boats.

226. The River Thames has been made navigable by various Acts in different parts, from time to time, has it not?—Yes; the first Act recites that it was navigable time out of mind, except as between Bircott and Oxford.

227. What Act are you alluding to?—24th George 2nd.

228. Have you got the Act of 6th and 7th William 3rd, which was referred to by Mr. Reilly yesterday?—I have not.

229. The Act that you have mentioned of George 2nd is not the first Act connected with the Thames?—No, it is not the first Act, but it is the first Act which is now in operation.

230. The 6th and 7th William 3rd, of course, is a prior Act; you are aware of the provisions of that Act, are you not?—No, I am not.

231. It was read to you by Mr. Reilly yesterday. The preamble states: "Whereas the Rivers of Thames and Isis have time out of mind been navigable from the City of London to the village of Bircott, in the county of Oxford, and for divers years last past from the said village of Bircott westward, somewhat further than Lechlade, in the county of Gloucester." From that you would presume that the navigation above Bircott was of a different date from that which was below Bircott?—It seems so.

232. You have referred to the Act of James 1st?—Yes, I have read that; I have it here.

233. Mr. *Acland.*] Where is Bircott?—A little below Abingdon.

234. Dr. *Adams.*] There was an Act passed in James the First's time to make the river navigable from Bircott to Oxford, was there not?—Yes.

235. Up to that time it had not been navigable from Bircott to Oxford?—So it appears.

236. There is also a second Act in James the First's time, is there not?—The first Act is 3 James 1, which is repealed by the 21 James 1.

237. Or amended, more properly speaking?—Yes.

238. In the 21 James 1, chapter 32, it is recited that it is navigable from London to Bircott by barges?—Yes.

239. And above Oxford by boats?—Yes.

240. Making

240. Making a distinction between a barge, which, according to the then fashion of the Thames, was of a tonnage of say 60 or 70 tons, over a boat which was about 25 tons?—That is about what they are now.

241. From that you would infer also that the navigation above Oxford was always of a different character, even at that time, to what it was below?—It appears so, certainly.

242. The Commissioners, when they got the subsequent Act, which is called the Governing Act, did very little to the navigation above Oxford, is not that so?—There was a considerable navigation there at one time.

243. I say they did very little towards it; they did not erect many works?—Only very small works.

244. Have you any document in your office which would show you whether or not they diverted the main stream in the neighbourhood of the city of Oxford?—I believe they did.

245. I will take you to that point in this way: the River Thames forms the boundary principally between the counties of Oxford and Berkshire, does it not?—Yes.

246. When it arrives at the City of Oxford, up to the City of Oxford the main stream, that is to say, the stream of the navigation, is the stream that is the boundary between the counties?—That is so.

247. When it arrives at Oxford the navigation stream leaves the shire stream, if I may call it so, and takes a different course, does it not?—I am not so well acquainted with that as Mr. Castle, who will give evidence.

248. You know the boundaries of the county of Berkshire?—Yes.

249. Just above the City of Oxford you know that the stream which is the boundary between the two counties is not the navigation stream; you know that generally?—I believe that to be the case.

250. Have you any accounts of the works that were done to make the navigation there?—Yes, I believe there is an account of that.

251. Have you them in your custody?—I have them not here.

252. But you have them in your custody?—I have not the accounts, but I think I could find a statement of the works in the Minute Books.

253. Have you any plan or drawing that describes them?—I have.

254. Are they sufficiently detailed to show what was done at that time?—No, I think not.

255. In fact, the old records of the old Commissioners are not in a very perfect state?—They are not.

256. You say that certain works were done by the Commissioners for improving the navigation above Oxford; did they make what is called Pink Hill Lock?—Yes.

257. That is now a lock belonging to the Commissioners?—It is.

258. That is in a very ruinous state, I believe?—I have not seen it for many years, but I believe it is.

259. Is there any lock above Pink Hill Lock that belongs to the Commissioners?—There is one near Lechlade, at Buscott.

260. Not at the junction with the canal?—No, that is the Thames and Severn lock.

261. That belongs to the canal?—Yes.

262. After the lock which you say is at Buscott, there is no pound lock until you come to Pink Hill?—Rushey lock is between.

263. That is some considerable number of miles?—Yes.

264. From Pink Hill to Oxford there are no locks, are there?—There are three; I said two, but I made a mistake.

265. Which do you call the three?—Buscott is one.

266. I am speaking of from Pink Hill to Oxford?—I must request you to ask the surveyor those questions.

267. Practically, you are aware, are you not, that the navigation above Oxford has entirely ceased?—Very nearly.

268. The navigation above Oxford fell off much earlier than the navigation below Oxford?—I believe it did.

269. And for some years before, the navigation below Oxford became so bad, as it has recently become, that there was very little trade down from Lechlade?—I believe there has not been much trade for some years; I am not able to speak positively.

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270. You have kept the accounts, have you not?—I have only been clerk for four years.

271. You have succeeded to all your father's books?—I have not looked back to them with a view of ascertaining that; I have no doubt that is a fact.

272. In fact, I believe, I may take it, that what you stated before the Commissioners was perfectly true, namely, that the navigation beyond Oxford is a thing of the past?—Very nearly, except up to Newbridge.

273. Was Newbridge the junction with the Oxford Canal; the junction with the Oxford Canal is, what is called the Duke's Lock, is it not?—Yes.

274. I believe that belongs to the Duke of Marlborough?—I believe it does.

275. It is on the Duke of Marlborough's property?—Yes.

276. There is a cut goes there to Newbridge?—Yes.

277. You are somewhat acquainted, I believe, with the situation of the property belonging to St. John's College on the River Thames?—Yes, I know it generally.

278. You know they have a very long frontage upon the upper part of the Thames above Oxford?—Yes, I believe so.

279. Are you acquainted with the situation of the lands, so as to know how they lie as regards the level of the river?—I am aware that one side there is a bank, and the other is open ground, but I am not very well acquainted with the land.

280. You are aware, I believe, as a fact, that there have been various efforts made for the drainage of that district by the College?—Yes.

281. You are also aware that an application has been made to the old Commissioners to make a bank in the parish of Northmoor and Stanner Park?—Yes.

282. Mr. *Yorke.*] What is the extent of the property of St. John's College abutting on the river?—I am not able to say.

Dr. *Adams* stated that it was more than three miles in length.

283. Dr. *Adams.*] You are aware that application was made by the old Commissioners for permission to make a drainage area from Newbridge, which you have already mentioned, down to the district just below Pink Hill Lock?—Yes.

284. You are aware that that included a large portion of St. John's College property?—Yes.

285. Are you aware that in consequence of the height of the high-water mark along that district, the lands bordering on the Thames have been very seriously injured?—I am aware that they are very much flooded.

286. I believe you are aware that some years ago the surveyor of the Thames Navigation reported that the various high-water marks along that district were too high?—I know there was a report, but I do not remember the terms of it.

287. Do you recollect what they called Mr. Pusey's committee?—I know there was a report, but I do not remember the terms of it.

288. There was a committee presided over by Mr. Philip Pusey, who was the Member for Berkshire at that time?—There was.

289. That was a committee of the whole of the people connected with this district?—Yes.

290. The surveyor of the Thames Navigation Commissioners attended them from time to time, did he not?—Yes.

291. I dare say you know this pamphlet well enough?—Yes.

292. As a matter of fact, it was reported then that the high-water marks were all too high in that district?—That may be so.

293. Was anything done by the old Commissioners to alter those high-water marks?—They altered the high-water mark at Lechlade, and lowered it about three years ago.

294. Down the river?—I know that the committee went down and surveyed the whole of it, and I think they also published a report.

295. This was in 1853?—Yes.

296. Perhaps you can tell me whether there was any lowering of the level in consequence of this report, as a general rule?—No, I am not able to say whether there was or not; I know that the committee went down the river,

and

and they published a report, which was printed, but I rather think that they did recommend that one or two should be lowered.

297. Was it done?—I have no doubt that it was done.

298. Has there been one single meeting until last year of the Commissioners of the district above Oxford, since 1853?—Yes, there is a meeting at Oxford yearly.

299. Of the district between Lechlade and Oxford?—Yes, yearly for the district above.

300. Did you ever get a Commissioner there?—It is a district meeting, which is held in October, for the purpose of appointing three members for that district.

301. But they never attend, do they?—Yes, they have always attended.

302. I have made a great many inquiries about the meetings of the Commissioners of the upper district, and I never succeeded in finding that they attended?—I do not mean that they met in the upper districts; they met at the general meeting, for the purpose of electing three members.

303. But they never met at a district meeting?—They come to the general meeting; there is no district meeting.

304. In fact they never do meet for business, because there is no business to be done above Oxford?—They meet as much as any other district committee meet.

305. That is nothing at all; you mean that they meet at the general meeting?—The district committee meet in general meeting.

306. Sir *G. Bowyer.*] Then I understand there are no district meetings?—Except one annually in each district for the purpose of appointing members.

307. Mr. *Neate.*] There is a meeting of the committees?—The committees of the different districts meet together and hold a general meeting of the whole court.

308. Sir *G. Bowyer.*] It is a committee composed of the representatives of the five districts?—Yes.

309. Mr. *Neate.*] What you call a general meeting is a meeting of 15?—Yes.

310. Besides that, there is an annual meeting of the whole body of the Commissioners?—The committee meet and advise a general meeting, and the general meeting confirms the resolution.

311. But the general meeting you were speaking of just now was a general meeting of the committee?—Yes.

312. Mr. *Acland.*] What is the quorum of the committee?—There is no particular number; we generally have seven or eight members present, and often ten.

313. Mr. *Neate.*] The members of the upper district attend just as much as the members of any other district?—Quite so.

314. Captain *Vivian.*] Is the general meeting of the whole of the Commissioners held the same day?—On the same day; but there are extra meetings of the committee whenever required; there would be a meeting at any time if there was one required.

315. Dr. *Adams.*] I wish distinctly to understand you; you have stated that there are five districts?—Yes.

316. One district is from Oxford to Lechlade?—Yes.

317. Has there ever been a meeting for that district for years past?—No; it is not the custom now to meet in districts.

318. Sir *G. Bowyer.*] There are no district meetings?—There are no district meetings; the whole of the committee meet and do business; the whole committee of 15.

319. Dr. *Adams.*] Practically speaking, nothing has been done in Abingdon above Oxford, since 1853, no works have been executed?—Very little work has been done, because there has not been much money; the Committee having had very little funds, have laid out the money where it was most wanted; we spent the money where we had the most traffic.

320. Are you acquainted with the course of the river sufficiently to know whether there are any mills above Lord Abingdon's mill, at Whiteham and Lechlade?—I think there is one mill.

321. Where?—At Rushey, but I am not sure.

322. Not on the stream?—I am not sure, I have not been there for many years.

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323. Therefore, the difficulties between the mill owners and the Commissioners do not exist practically between Lord Abingdon's mill and Lechlade?—No; they do not.

324. You have had a great deal of experience as to the sort of body that ought to have the government of such a river as this; have you formed any opinion as to whether it would be desirable to transfer the whole of the Thames, from Lechlade down to London, to a body composed as is the Upper Thames Conservancy?—I think there ought to be local representatives.

325. Of a substantial character?—Yes.

326. You would not be satisfied with such a number as three to 18?—I do not think they would be of much use.

327. Now, we have heard that the constitution of this body is the Lord Mayor, some Aldermen and some Common Councilmen of London; do you think they are likely to be a body who would take any interest in the drainage in the upper part of the Thames; do you think those are gentlemen who would pay very much attention to the requirements of the Londoners, and the upper part of the Thames?—I think it is very desirable that the Londoners should have representation.

328. You have already expressed an opinion upon this subject before the River Commissioners?—Yes.

329. At Question 8605 you stated that you thought there ought to be a sufficient number of such representatives; that is, representatives of the people of the upper district?—Yes.

330. And you went on, in answer to a question which was put by Professor Way, to state that, in your judgment, the number of three would be useless?—Yes.

331. That is quite your opinion now, is it not?—Yes, I think so.

332. You suggest that there should be the same number for the upper district; that is to say, from Staines upward as from Staines downward?—Yes; that was merely my own suggestion.

333. But you are of opinion that that would be a fair proportion between the two bodies?—It is a very long district to be represented, 107 miles.

334. And with very complicated interests?—Yes; that must be understood as my own opinion, and not the opinion of the Commissioners.

335. The Commissioners have expressed no opinion upon this Bill at all, I believe?—Yes, they have proposed 10; two from each district, instead of three.

336. When was that done?—That was done when the Petition was presented to the House.

337. When was the meeting held at which that was agreed to?—The committee was appointed at the meeting which was held at Reading in March last.

338. Was there any special notice given that that question was coming on?—No.

339. Mr. *Acland.*] You stated before the Committee that if 15 members were added to balance the existing number, that it would be an unmanageable board, is that your opinion now?—Yes, I think it would be too large a board.

340. Do you mean to say that a less number than 15 would be practically useless, or a less number than an equal body to those who are already in existence?—I think it should be an equal body.

341. Sir *G. Bowyer.*] When you stated that three Commissioners would not be sufficient to represent the Upper Thames, I apprehend you meant to say that, having regard to the number of Conservators?—Yes.

342. Then as the number of Conservators was diminished, your opinion would *pro tanto* be altered?—Yes.

343. If the numbers were equal it would make 34 Commissioners, and that you are of opinion would be an unmanageable body?—It would be too many.

344. Do you think 20 would be an unmanageable body?—No, I should think not, because the whole would probably not always attend.

345. Sir *M. Beach.*] In what respect do you think they would be unmanageable?—I think a small number of people do business better than a large number.

346. Do you think 20 would be better than 30?—Yes, and probably 10 would be better than 20, if they all attended.

347. Captain *Vivian.*] Are the interests of the Conservators and the interests of the Commissioners directly opposed?—They are not at all opposed.

Cross-examined by Mr. *Macnamara* (on behalf of the Corporation of Reading, and the Local Board of Health of Reading).

348. I BELIEVE large powers are proposed to be given over the Upper Navigation to the Conservancy Board by this Bill?—They are.

349. They are to have all the same powers as the Conservancy Board would have over the Lower Navigation?—Yes.

350. Including the right to make bye-laws for regulating the navigation?—Yes.

351. And they are also to have additional powers as to sewage, which are not possessed by the Conservancy Board?—Yes.

352. I believe they are thus constituted under the Act of 1857, 20 & 21 Vict. cap. 147; 12 were appointed?—Yes.

353. Those 12 still remain, with six who were added by the subsequent Act of 1864?—I believe so.

354. I believe the first 12 were these—the Lord Mayor of London, two Aldermen, four Common Councilmen, one Deputy Master of the Trinity House, two appointed by the Admiralty, one by the Board of Trade, and one by the Trinity House?—That is so.

355. That is by section 3 of the Act of 1857; then in 1864 it was considered advisable that six should be added to represent the special interests of the Lower Navigation; is that so?—That is so.

356. Then I see by section 6 of the Act of 1864, two were elected by owners of shipping registered in the Custom House, Port of London; one by the owners of the steamers plying on the River Thames not seaward of Gravesend, two by the owners of lighters and steam tugs used in the River Thames, and one by the occupiers of docks on the River Thames?—Yes.

357. The River Thames in that section means the Lower Thames from Staines?—Yes.

358. So those six who were added to the 12, represent the special interests of what we might call the Lower Navigation?—Yes.

359. I understood you to say, in answer to my learned friend, Dr. Addams, that you thought the landed interest of the Upper Navigation ought to be represented?—Yes.

360. The powers that were about to be exercised over the Upper Navigation would also materially affect the interests of the towns upon the Thames, would they not?—Yes.

361. For instance, all the navigation is to be regulated in which those towns are to be largely interested?—Yes.

362. Barges are to ply from place to place, and so on?—Yes.

363. Are you not also of opinion that the public local authorities of the Upper Navigation should be represented?—Yes, I think it would be a proper thing that they should be represented.

364. For instance, Reading has more than 30,000 inhabitants, I believe?—Yes.

365. The Thames forms the northern boundary of Reading, does it not?—Yes.

366. The River Kennet, which would be interfered with very much by the sewage clause, runs right through it, I believe?—Yes.

367. And there are wharves all along the Kennet?—Yes.

368. Into Reading and through Reading?—Yes,

369. The Corporation of Reading are the governing body, and are also the Local Board of Health?—That is so, I dare say.

370. I observe that with regard to the three additional Conservators to be appointed, it is proposed that they should be elected by the Thames Navigation Commissioners?—Yes.

371. And who they are appears in the Bill; I observe it is proposed that the electors of the three shall include among them the Lord Mayor, Alderman, and City of London?—Yes.

372. Although those are to be extinguished as representatives, it is proposed that they should have an existence as electors?—Yes.

 373. I understood

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373. I understood you to say yesterday, that many of these are persons who need not reside at all in the Upper Navigation districts, if they have lands there?—It is so set forth in the Bill.

374. I understood you to say, in answer to my learned friend Dr. Addams, that the three who are proposed to be added would not be a satisfactory arrangement?—That is my opinion.

375. Would this, in your opinion, be a satisfactory arrangement both with regard to the upper and lower navigation: Suppose the Conservancy Board should consist of 18 members, six to be nominated by the Thames Conservancy Board, six to be nominated by the local authorities on the upper navigation in this proportion, one for Oxford Corporation, one for Oxford University, one for the Reading Corporation, one for Abingdon and Wallingford, one for Henley and Marlow, and one for Windsor and Maidenhead, and then six to be nominated by the land owners and mill owners and other persons interested; do you think that would be a reasonable body to carry out this Act, as representing the different interests to be affected by it?—Yes, I do not see any objection to it.

Cross-examined by Mr. *Holland*, on behalf of the Grand Junction Waterworks and the Vauxhall and Southwark Waterworks.

376. I gather from the evidence you have given before the Committee that you think that, if the works are put in progress, there will be considerable increase of traffic on the river?—We are led to suppose there will be a considerable increase of traffic on the river if the works are put in order.

377. With reference to that, I see at question 109 of your evidence given before the Select Committee you are asked this, "Do you think that you could present them with such a security as would be sufficient?" you say, "I think we could show that the increase of traffic would be so great as to afford sufficient security;" then at page 110, you are asked, "The security you would offer would be some expected future increase of revenue?" to which you replied, "Yes, by putting the works in order; we believe that so large a traffic would come on the river, that whatever might be the state of the present bondholders, Government at all events would be satisfied." Therefore, you seem to expect a considerable increase of traffic?—Yes.

378. That, of course, might be increased by an alteration of tolls?—Yes, that was necessary.

379. That, I need hardly ask you would be a considerable benefit both to the inhabitants of the towns and also to those on the banks?—Yes.

380. Sir *G. Bowyer.*] Do you think that if the navigation was improved, the river might be able to compete with the railways?—I think it would with regard to coals and timber.

381. Colonel *Napier Sturt.*] There would be more steam barges, would there not?—It was proposed to introduce steam barges.

382. Sir *G. Bowyer.*] Are you aware that steam barges occasion considerable injury to the banks of the river?—There is one running from Reading which I do not think occasions any damage.

383. Do you remember a small steamer which used to run from Oxford to Newnham?—That did damage.

384. You remember that I took measures to stop it from running, because it injured my banks?—Yes, that was a paddle boat; but I think with screws they find little or no complaint; they use screw boats on canals.

385. Do screw boats cause any injury to the banks?—I believe not; I think that was given in evidence before the Committee last year.

Cross-examined by Mr. *Sargood*, on behalf of the Conservators of the River Thames.

386. As I understand you, the present income is not sufficient to meet the present expenditure of the Upper Navigation?—That is so.

387. The proposal by this Bill to transfer the honour of conducting the affairs of the present Conservators, I suppose, embodies the idea that they shall find a deficiency?—I presumed so; but I have nothing to do with the preparation of the Bill.

388. Is that as you understand it?—Yes.

389. Then

389. Then if the proposed Board are to find a deficiency, have you any fault to find with the present constitution of 18 as it stands?—I think the Upper Thames should be represented on that Board.

390. I want to know, as the Board is at present constituted, do you take exception to any of its existing members as persons not competent to be entrusted with the navigation?—I know nothing of them.

391. Then we will assume that you do them the favour not to impeach them; will you tell me what there is to represent, if the Upper Navigation is thoroughly insolvent, and we are to find a deficiency; the only thing to represent seems to be our deficiency?—There are many local interests which will be affected.

392. Just mention any of them that you think requires notice?—For instance, the question of sewage.

393. Why cannot the Board as at present constituted deal with that subject?—Then there is the question of the banks of the river.

394. Before we get to the banks of the river, let us finish with the question of sewage; why cannot the Board, as at present constituted, deal with that subject?—They have very strong powers given them under the present Act for the purpose of stopping any sewage going into the river.

395. I am not asking you so much what their powers are as why the present Board cannot exercise the powers with propriety and satisfaction?—I think that the local interests ought to be represented, because then the circumstances would be better known.

396. Having regard to the constitution which has just been read to you, you having the Deputy-Master of the Trinity House and another Conservator appointed by the Trinity House, two by the Admiralty, and one by the Board of Trade, do you not think there is a sufficient protecting element in the constitution of 18?—I do not think they know much about the Upper Thames.

397. Why should anyone appointed by the Board of Trade be supposed to know more about the Upper Thames than the Lower Thames, or the Lower Thames than the Upper; I want you to consider whether the Board, as at present constituted, has not a sufficient protective element to render local representation unnecessary; by protective element, I mean the presence of persons on the Board, who have no individual interests to serve, and who therefore look to the interests of the general body?—No, I do not think so.

398. Do you not consider that a Board of 18 persons is sufficiently unwieldy for the purposes of business as not to have their number added to?—I think that is quite enough.

399. I may ask you that with some confidence, you having had a large experience?—Yes.

400. What is the average attendance on the Upper Navigation?—Ten or twelve.

401. I daresay you find that attendant with some inconvenience from the force of numbers?—No, I have no cause to complain of that.

402. Do you agree with me, that 18 are quite enough?—Yes.

Cross-Examined by Mr. *Toulmin Smith*, on behalf of the Lambeth Water Works.

403. You are aware that under the Bill before the Committee separate accounts are to be kept by the Conservators of the Works of the Upper Thames and the Lower Thames?—Yes.

404. That includes, of course, your answer to a question which was put to you as to the borrowing of money: the Upper Works and the Lower Works accounts are quite distinct?—The accounts are to be quite distinct.

405. Is it not a fact what you have already stated before the House of Commons, that with regard to the Commissioners they are practically an insolvent concern?—Yes.

406. To what source do you look for any income which will enable you to complete the navigation or any works other than the problematic nature of which you have spoken?—That is the only source that I am aware of.

407. And that is only problematical?—I think myself there would be an increase.

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Cross-examined by Mr. *Lumley Smith*, on behalf of Ibotson & Sons, and others, Paper Makers.

408. You have stated your opinion that the local interests of the upper river should be represented on the new Board?—Yes.

409. You have stated in answer to one of my learned friends, that you thought local Boards ought to be represented, and the public authorities connected with the upper river:—That is a question which I have not considered, but I see no objection to it.

410. That would apply also to the mill owners, and other persons interested in property on the river?—Yes; that is a question that I have not thought of.

411. I see in your evidence, given before the Rivers Commission in answer to question 8603, you say:—"The electors are a very good body; they consist of the clergy and riparian owners, and are, very generally speaking, men of intelligence." I suppose I may take it as a matter of fact that there are very few mill owners, if any, among those proposed conservators?—Yes; I should think there are most of the mill owners.

412. The Commissioners are appointed under the 35th George 3, chapter 106, section 25?—Yes.

413. The qualification of a conservator is this, that he should be a person having an estate in any of the counties of Wilts, Gloucester, Oxford, Berks, and Bucks, of the value of 100 *l.* per annum?—Yes.

414. Do many mill owners come under that qualification?—I am not able to answer that; I know several of the mill owners have qualified.

415. Would that be the majority of the mill owners or the reverse; probably only a small portion of the mill owners have qualified?—I cannot tell.

416. I may take it, that unless the majority of the mill owners have qualified, or are about to qualify as Conservators, they would be over-ridden by the three Conservators proposed to be elected upon this Conservancy Board?—Yes.

Cross-examined by Mr. *Lewin* (from the Firm of Gregory and Rowcliffe.)

417. Are you acquainted with the high and low water marks in use for regulating the water?—No, I am not; that is not part of my duty.

418. It would be your duty as clerk to the Commissioners, to prosecute any case in which the mill owners were in default either in drawing the water too high, or drawing it too low?—Yes, when they are complained of.

419. Have you ever had cause to do so?—Whenever I have had complaints I have written letters, and they have been attended to.

420. Will you look at the names of the Petitioners whom I represent (*handing the Petition of the mill owners signed by Jacre and others to the Witness*). Have you had any complaint against them?—I have never had cause to take any proceedings against any of them; I have had one or two complaints of not properly keeping up the water.

421. Have you ever had any difficulty in obtaining redress?—I have written to them, and it has generally been set right.

422. I believe under this Bill it is proposed to transfer the water from these mill owners to the Conservancy Board?—It is.

423. But not to vest in them the soil of the river?—No.

424. Have you considered how the Conservancy Board are to repair the banks or how the power is to be vested in them?—No.

425. Do you see how they are to be prepared to do that without trespassing upon the land?—I should think they would have some difficulty, but I am an engineer.

Re-examined by Mr. *Phinn.*

426. Do you see any such severance of the interests between the upper and the lower part of the river that you do not think a public body, constituted as we propose of 21, could take care of both?—As I said before, I should prefer seeing more representatives of the upper river.

427. Do you see any such difference between the interests of the people on the upper part and the lower part that you do not think a body constituted as we suggest would take care of both?—I do not think they could so well. I think

think we want, upon the sewage question especially, a representation of the upper part; very strong powers are taken under the Bill, and the towns would require representation.

428. Therefore, with reference to that question of sewage, do you think that the towns require more representation than they have now got?—I think they should be represented.

429. Are you aware that, with reference to the question of sewage, that it is merely the Board which is to be put in motion, but the decision is not to be left with them?—They may give twelve months' notice, and then they must remove the sewage from the river.

430. I think you have hardly read the Bill; there are savings, are there not?—There are some savings.

431. Sir *G. Bowyer.*] There is a power to extend the time?—Yes; my objection was this: that there ought to be some other means provided for the towns to get rid of their sewage before they are compelled to divert it.

432. Mr. *Phinn.*] That hardly comes to the question of representation; putting the sewage matter aside, with reference to the navigation, do you not think that all parties on the river, above and below, are interested in the navigation equally?—Well, I do not see the particular interest of the Conservancy Board in the Upper Navigation.

433. I suppose people in London will have to send their goods up?—Of course they will.

434. And will have to receive whatever the river sends down?—Yes.

335. Sir *G. Bowyer*]. Do not some barges, or some traffic go from the Upper Thames to London?—Yes.

436. Then I suppose London is interested in that traffic?—Certainly.

437. Mr. *Phinn.*] Do you not think that London is pretty much interested in the purity of the water?—Certainly.

438. You think that the landowners ought to be represented; do you mean represented by more Members at the Board, or do you mean that they ought to make a larger portion of the constituency?—No, not a larger portion of the constituency, more Members at the Board.

439. As far as constituency is concerned, do you think the landowners are fairly represented in the constituency?—Yes.

440. Do you find that the mill owners who are Commissioners are much more assiduous in their attendance than anybody else?—I know two or three who attend regularly.

441. Two or three out of how many?—I am not able to say how many there are on the Board, 20 or 30.

442. How often do they attend in the course of the year?—I have seen them at the meetings at different periods of the year.

443. How often do they attend in the course of the year now?—There is only one meeting at Reading in the year.

444 You find two or three of them at the annual meeting?—Yes.

445. Now with regard to the land owners, we have heard a good deal from my friend Dr. Adams, of the grievances of the land owners; do you find the land owners attend in large bodies?—Not in large bodies.

446. How many come, for instance, to the meeting at Reading?—The attendance is not large usually.

447. What is the largest attendance at any meeting that you have got?—I think there are 30 or 40 sometimes at Reading.

448. I rather thought that somebody from Oxford gave evidence that you had to go round by beat of drum to get enough Commissioners to meet?—That was for the election of the district committees.

449. And the land owners even had great difficulty in constituting a meeting for the election of the district committees?—Yes, they have had difficulty.

450. Are you for putting an end to the navigation of the river above Oxford; is that what I understand to be the bent of your opinion?—I do not think there is much to be gained from it; I think it is practically gone.

451. How would Lechlade fare in that case?—I do not think there is any navigation now at Lechlade; I believe they are now enclosing part of the Thames and Severn Canal, which would make much less.

452. My learned friend Mr. Toulmin Smith was exceedingly anxious to know where you would get the money from; I suppose you would not see any harm in

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taxing his clients a little, that is the Water Companies who take the water, would you?—Well, I think they might pay something if they have the water purified.

Examined by the *Committee.*

453. Mr. *Acland.*] What is your professional occupation other than that of clerk; are you a land agent or anything of that sort?—I am a solicitor; I should say that the opinion I have expressed as to the constitution of the Board is entirely my own view.

454. Have you any experience of the management of landed estates?—Yes, considerable.

455. Do I understand the answer which you gave Mr. Phinn just now with reference to the state of business which has fallen to the Commissioners to be not with reference to future business, which will be undertaken by this Board. You have been speaking, have you not, of the fact of the attendance by Commissioners with reference to the water communication, and having no duties to perform, as to the management of the surrounding properties, or with the sewage?—That is so.

456. Is it not the fact, that under this Bill there would be two distinct branches of business, which may to an indefinite extent be connected with those two subjects, namely, sewage and land drainage?—Yes.

457. Are you of opinion that 18 gentlemen connected with mercantile pursuits and financial interests in London are competent to deal with all the land interests and sewage interests which will arise under this Bill, in the basin of the Thames?—I should much prefer seeing some land gentlemen on the Committee as local representatives.

458. Looking to what will probably be the result of this Bill, which do you think will be the more important branch of the business, the simple interest of the barge navigation, or the interest of the town, with reference to the sewage, or the interest of land with reference to drainage; which will be the most important part of the business, which will have to be transacted by this Conservancy Board, if some such Bill as that proposed is passed?—No doubt the sewage and drainage questions are large questions.

459. Mr. *Neate.*] I believe the Thames Commissioners have made certain suggestions?—Yes.

460. Are they embodied in their petition?—They are.

461. One suggestion is, is it not, that the representatives of the Upper Thames shall be elected by the qualified Commissioners exclusively official, and the other electors below Staines?—That is proposed.

462. You make another proposal that the meetings shall be held at the principal towns in the upper district?—Yes.

463. And that the election of a new Board shall be confined to the Conservators above Staines?—Yes.

464. And qualified Commissioners?—Yes, exclusive of all those residing below Staines.

465. Do I understand that you would exclude the official Conservators above Staines?—No; I am not prepared to do that.

466. Mr. *Acland.*] You, of course, have considerable knowledge of the feeling of the different country towns which may be affected by this Bill?—Yes.

467. You were asked whether these important gentlemen in London did not give by their constitution adequate protection to all the interests of Reading, Wallingford, Abingdon, and all the towns along the Thames; are you of opinion that those towns would be satisfied to have their whole sewerage system and the distribution of sewage managed by a few merchants and ship owners of London?—No, I do not think they would; I think they would object.

468. Now, with reference to the election, as proposed by this Bill, of three persons, or any other number as may hereafter be settled, are you of opinion that this very large body of 600 persons is the best constituency to elect the persons who are to represent the interests of all the upper part of the basin?—No; I do not know that they are the best.

469. Are you prepared to say that they ought to be elected and not be nominated by the Crown, or some other authority responsible to Parliament in some form

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form or other; are you prepared to say that local election is the best way of getting the highest class of men for that particular kind of duty?—That is a question which I have not considered.

470. You are not prepared to say at present, that in your judgment the proposal to elect the managers of the upper interests of the Thames by this constituency, is the best plan?—I am prepared to say that I think that it would be a very good one, but I am not prepared to say that it is the best.

471. Mr. *Peel.*] Did you notice in the Acts of William III. and James I. that the jurisdiction of the Commissioners only extended as far as Lechlade?—No, I have not seen the Act of William III.

472. Do you know what reason there was for altering it to Cricklade in the latter Act?—No; I do not know at all.

473. Have the Commissioners taken any action with regard to the part of the river between Lechlade and Cricklade?—Not at all.

474. Has the district between Lechlade and Cricklade any share in the election of members?—No, it has not.

475. None whatever?—None at all.

476. But yet it is part of the district over which the Commissioners have jurisdiction?—It has been exercised for many years.

477. Colonel *Napier Sturt.*] Gentlemen living in boroughs have the right to attend if they please?—Yes.

478. Have you never known them attend?—No.

479. Mr. *Acland.*] Are there local boards of health in some of these towns on the Thames?—In Reading there is one, and there is one in Oxford.

480. Is there any recognition whatever in the Bill of these local boards of health?—No, I believe not.

481. Are you prepared after that statement to say that you would entrust the management of the interests of the River Thames to a body, in the election of which the Local Boards of Health of the principal towns have no voice whatever?—I think I said before, that I thought it would be advisable that the towns should be represented.

Mr. *James Castle,* called in; Examined by Mr. *Phinn.*

Mr. *James Castle.*

482. You are the general Surveyor of the navigation of the upper districts of the Thames, I think?—Yes.

483. How long have you been in that position?—About three and a-half years.

484. I believe you also unite the functions of a member of the Corporation of Oxford and the Local Board of Health of Oxford?—Yes.

485. Your evidence, I think, was given both before the Committee and the Commission, was it not?—Yes.

486. Your evidence given before the Commission begins at Question 1915, page 61, and before the Select Committee at Question 189, page 10?—Yes.

487. Mr. *Acland.*] Are you a civil engineer?—I am an architect.

488. Mr. *Phinn.*] Do you adhere to the evidence generally which you have given before those two bodies?—Yes.

489. I must ask you generally what is the state of the river with regard to its works?—That is very correctly stated in the Report of the Rivers Commission, which I believe you read in your opening address.

490. Is it dilapidated and in a state of decay?—Entirely so.

491. Is there urgent necessity for immediate action?—Yes.

492. I believe this very morning you have received intelligence that the navigation has actually stopped, have you not?—Yes.

493. Is it by a collapse at Bellweir?—Yes, the weir nearest to London in the district under the superintendence of the Navigation Commissioners.

494. That is your first weir above Staines, is it not?—Yes.

495. Who are the owners of that weir?—The Navigation Commissioners.

496. Have you a pound lock in the neighbourhood?—Yes, at the weir.

497. Are there other weirs in a very dangerous state?—Yes, both weirs and pound locks.

498. We will first deal with the weirs; that is so with regard to the weirs?—Yes.

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499. Now, with regard to pound locks, will you mention any one that is in a dangerous state; what is the state of Romney Lock, near Windsor?—It is very dangerous.

500. That would be at a part of the Thames which I suppose is more frequented than most parts of your navigation, is it not?—Yes, probably it is.

501. Is that the place near where the old waterworks for the supply of Windsor Castle were?—Yes, it is where the head of water which supplies Windsor Castle is.

502. I believe the Treasury actually advanced money for the reconstruction of that weir, did they not?—They proposed to advance money; but, since the Report of the River Commissioners, I believe their order for the advance of money has been countermanded.

503. They were led to believe that the Committee on this Bill may enable you, I will not say to raise the wind, but to maintain the water in a proper state of efficiency, and that may be done without having to put their hands into the Government's pockets?—I hardly understand your question.

504. You say that the Treasury proposed an outlay of some money, and that that intention has been departed from?—Yes.

505. That was so just after the Report of the Commissioners?—Yes.

506. With a view to this Bill?—Probably.

507. I believe Eton College, who have interests on the river, also suggested some intention of interfering in that neighbourhood, have they not?—Yes; it was understood that they would contribute towards the repair of Romney Lock, but since the introduction of this Bill they have declined to do so.

508. Without going into details, what sum of money do you think is immediately necessary for the actual prevention of danger on the river, not prospectively, but immediately?—At least 2,000 *l.* ought to be expended during this present summer, to avoid accidents.

509. That is, to avoid accidents from the flooding and so on?—No; to avoid accidents both to life and to cattle; at the present moment I have letters in my possession which have been given to me by landowners, who complain that bridges are broken, and it is not safe for their horses to pass; I have a complaint from one landowner that a bridge leading from the main road to his meadow is not sufficiently strong to enable him to send his sheep across it.

510. What will it cost to put the navigation into a state of safety, so that it can be immediately worked?—I very carefully made an estimate when I gave my evidence before the Select Committee in 1865; at that time I considered that the sum of 30,000 *l.* was required; since that time several works have, of necessity, become very much more decayed, in consequence of the time which has elapsed. That sum is hardly sufficient at the present moment to cover the cost of restoration.

511. Sir *G. Bowyer.*] I suppose that the longer some satisfactory arrangement is delayed, the greater will be the expense eventually of putting the navigation in order?—Quite so.

512. Mr. *Phinn.*] I believe you maintained a staff of workmen until about a year and a half ago?—Yes.

513. For the purpose, I suppose, of effecting the necessary repairs, and for keeping a supervision over the river?—Yes.

514. Have they been all discharged?—They were taken on for some short time at the commencement of this year; but they are at the present moment all discharged, with the exception of a few who are working.

515. How many workmen used you to retain as necessary to the proper supervision and control of the river?—I can hardly say, since I have been connected with the Thames that sufficient workmen have been employed for the necessary supervision of the river, but perhaps from 25 to 30 men.

516. How many have been on lately?—About 12, I think.

517. How many are on at this moment?—About 12.

518. Is that a sufficient number to keep you informed as to the state of things, and to effect further repairs?—I get my information, not so much from the workmen as from the poundkeepers, and the poundkeepers are all following their usual occupations.

519. Of keeping the pounds?—Of keeping the pounds.

520. You keep them on?—Yes.

521. Are the tolls sufficient to pay them?—I should say that the tolls up to the

the present time for this year, are about equal to the receipts from the same source last year.

522. There would be very little for any great outlay, such as the repairs of weirs, or anything that gives way?—There would be nothing at all sufficient for a work of that kind.

523. I believe, in point of fact, that old Windsor Weir is nearly carried away?—Yes.

The Chairman here retired, and Sir G. Bowyer took the Chair.

524. The weir that you refer to at Windsor is below Datchet, is it not?—It is close to Datchet.

525. How many weirs are there in the district between Oxford and Lechlade which do not belong to the Commissioners?—About 14.

526. Are you in favour of keeping up the navigation of the upper part of the river, as between Oxford and Lechlade?—I certainly am not disposed to agree with those who wish to abandon the navigation of the part of the river above Oxford; it seems to me of very little use at the present time; but seeing that there is very little probability of any railway ever being brought into that district, I consider that it is to the interest of the landowners that the river should be maintained, and that there should be perfect navigation for farm produce, such as coal, manures, and other articles which must be required in that district.

527. Sir *G. Bowyer.*] Can you tell us what the traffic on the river between Lechlade and Oxford consists of?—Principally coals, which are taken from the Oxford Canal up to Newbridge; they are coals which are brought from the Severn districts to Lechlade, and for a short distance downwards; there is also some slight traffic brought to Buscott Park.

528. Have you any idea how many barges with coals pass along the portion of the river between Lechlade and Oxford?—There are two barges which work constantly from the Oxford Canal, or the Collieries rather, to Newbridge.

529. Mr. *Acland.*] Where is Newbridge?—Newbridge is on the line of road between Witney and Abingdon.

530. Col. *Napier Sturt.*] There is very little of barge traffic above Oxford; it is nearly all carried on in boats, is it not?—It is what we call barge traffic.

531. We have been told that vessels of 25 tons are boats and not barges?—Those are canal barges.

532. Mr. *Acland.*] Do I understand you to say that although there is very little navigation upon that part of the Thames which is immediately near Oxford, that there is canal navigation from other districts down to Lechlade?—Yes.

533. Mr. *Phinn.*] As I understand you, if that navigation were stopped, the Lechlade people would be rather hard put to it for coals and other things?—I imagine they would.

534. They have no railway, within what distance?—Within four miles.

535. Mr. *Peel.*] What is the size of Lechlade?—About 3,000 inhabitants.

536. Sir. *G. Bowyer.*] The Oxford people get their coals by rail, I presume?—A great part of the coal comes by the Oxford Canal.

537. Mr. *Acland.*] What is the Oxford Canal?—The Oxford Canal works principally from Derbyshire, Leicestershire, and Warwickshire.

538. Not down to the Thames at all?—No.

539. Mr. *Peel.*] There is no water communication from Lechlade to Oxford except the river?—Yes, a portion of the Oxford Canal is used to form the water communication between Lechlade and Oxford.

540. A great deal of the traffic which comes from Lechlade is taken by the Thames and Severn Canal?—A small portion of the Oxford Canal which is used is near Oxford.

541. Mr. *Acland.*] Do we understand you to express any opinion as to the importance to the City of Oxford of improving this navigation, and to make it navigable?—Yes; I consider it is of the greatest possible importance, that whatever Board has the management of the river, should have the entire control of the whole of the districts at present under the jurisdiction of the Navigation Commissioners.

542. Mr. *Phinn.*] I believe one of the great shortcomings of the present

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system is the want of control of the river in times of flood?—That is one of the objections made principally by the inhabitants of towns.

543. That the flood waters are not properly regulated?—Yes.

544. Do you think it important that more attention should be paid, and more measures taken, for the regulation of the flood water than have been hitherto adopted?—Yes, I should say that the complaints as to the flood are also made by landowners equally with the complaints which are made by the inhabitants to towns.

545. In fact, I believe one landowner gets another landowner's hay according to the present state of things?—That is a very exaggerated statement; the evidence which was given with regard to that refers to some considerably distant period, but it hardly applies now.

546. As you are a member of the Oxford Corporation, and also a member of the Local Board of Health, I know my friend will ask some questions if I do not, so I may as well just ask you some. Put yourself for a moment out of the position of an officer of the Board, and looking at your position as a member of the Town Council and a member of the Local Board of Health, do you think it important that the river should be kept clear of sewage, to begin with?—Yes.

547. Do you, in your representative capacity in Oxford, object to the powers which are taken for the control of the sewage?—To some extent.

548. Hitherto you have used cesspools very much at Oxford, have you not?—The main drainage of Oxford at the present moment is carried out in connection with the river; the sewage has been discharged into the river for some five or six years past, cesspools have been very generally abolished; the portions of a new scheme have been carried out with a view of briniging the sewage in a line with the river.

549. And eventually discharging into the river?—At the present moment it is discharged into the river.

550. Mr. *Acland.*] Do you mean below Oxford?—Immediately in Oxford; I am referring to Trimwell sewer, which is not a covered sewer.

551. Mr. *Phinn.*] I remember at one time, Christchurch meadows were not very savoury?—They are worse now than they ever were.

552. All that is eventually to be poured into the river, unless some authority intervenes?—Yes, that is now the practice.

553. And will be, I suppose, when your new system of sewers is finished?—No.

554. What are you going to do, where is your outlet for your sewage?—I believe at the present moment, the Local Board of Health are discussing a plan for carrying sewage upon the land.

555. Voluntarily?—Yes; I should say that a resolution has been passed by the Local Board of Health, on the motion of the Vice Chancellor of the University for that purpose; it is in contemplation to divert the sewage from the river, and to place it upon the land.

556. Therefore you would not object, as far as Oxford is concerned, to the prevention of the pollution of the river, because you are about to abandon it yourselves; do you think that other bodies ought to be allowed to pollute it?—I do not.

557. Are any of the affluents of the river polluted by sewage from places above it?—Yes; the Charwell, to a considerable extent.

558. You are aware we take power within three miles of the Thames, as the crow flies, over the affluents of the river?—Yes.

559. Do you object to that as not sufficient for the protection of Oxford, or do you think that that would be as much as we could possibly expect to get?—On that point I agree with the petition of the Local Board of Health of Oxford; they ask that some provision should be made in this Bill, for controlling the tributaries to a longer distance than three miles; for my own part, I see that there is very great difficulty in carrying out that suggestion, but if it is possible to carry it out, it certainly ought to be.

560. Sir *G. Bowyer.*] Why should three miles be fixed any more than four or five miles?—I am not aware.

Mr. *Phinn* explained that that distance was taken from the Conservancy Act.

561. Mr. *Phinn.*] Do you know anything about Abingdon?—Yes.

562. How

562. How do they drain there?—They drain into the river.

563. As you forego it at Oxford I suppose you think it is fair that some control should be imposed on Abingdon?—Certainly.

564. In your calculations are you taking into consideration the proposed company for utilising the sewage of the Thames; have you had any dealings with them?—Yes.

565. Do you know anything of their proposals; can you give the Committee any light upon that question?—At my suggestion the engineer of the Thames Purification Company attended before the Local Board of Health at Oxford, and gave an explanation of his scheme which is now before Parliament.

566. Can you summarise very shortly without going into details what the proposals of that company are?—The proposals of the company, as far as I understand them, are to take the sewage of the various towns situate on the banks of the river after the sewage has been brought by the towns to a certain point. This company then proposes to pump up, and distribute by gravitation the sewage, and to take land for that purpose.

567. Then they distribute it to the farmers and people who want sewage, such as market gardeners and so on, at so much per gallon; I suppose just as the Maplin's Sands Company are doing?—I am not sufficiently aware of the details of their plan to answer that.

568. Sir *G. Bowyer.*] Do you know whether that company has a board of directors?—I do not.

569. You do not know who the directors are?—I do not, the names of three are mentioned in their Bill, but I do not recollect who they are.

570. Are there any shares subscribed for, do you know?—I am not aware.

571. Mr. *Phinn.*] As far as you know is this company for the purification of the Thames a *bonâ fide* scheme?—It is certainly *bonâ fide* on the part of the promoters, as far as I can understand it.

572. Sir *G. Bowyer.*] Do you think it is a scheme which is likely to be successful?—I think, with reference to Oxford, that the plan is a very desirable one; I do not say that it is a good plan for the whole of the towns; for instance, this proposal to pump to a great height from Romney Hurst is open to objections; but as to taking power to pump from Romney Hurst, as I understand the engineer, they have power to distribute sewage over land at a low elevation, I think it is possible that the sewage may be applied economically; but one great point in favour of this plan with reference to Oxford, is this, that this plan does not at all interfere with the river in any way; the plan which is now under consideration for draining Oxford is very materially affected by flood, and, in my opinion, during flood times must be inoperative.

573. Do you suffer very much at Oxford in the neighbourhood of Port Meadow, and so on, from floods?—We suffer, perhaps, to a greater extent than the other districts along the river.

574. I am asking you between Oxford and Whiteham, on the Seven Bridges-road; is not that road very often impassable from floods?—Not the road.

575. Do you not think any regulation or any power by which those who have the government of the river will also regulate the flow of water, will be beneficial to Oxford itself?—Yes; proper regulations for the flow of water would not only be beneficial to Oxford, but would be also beneficial to the river.

576. Mr. *Peel.*] What is the present state of the road leading to the Great Western Carriage Works, at Cripley Meadow; they were under water for many months, were they not?—Yes.

577. Mr. *Phinn.*] That is the road to the Great Western Station?—The Great Western Passenger Station at Port Meadow, which you are speaking of, is, in my opinion, a most objectionable site.

578. With regard to representation, do you think that some provision ought to be made for the direct representation at the Board of such bodies as the Local Board of Health and the Corporation?—Yes; having heard the questions that were put to the last witness with reference to this point, I have formed an opinion, which, perhaps, I have not sufficiently considered, but it occurred to me that by giving the Local Boards of Health in the Thames district a representation at the Board, that perhaps the question of increasing the representation might be very fairly met; I say that for this reason, that at Oxford the Local Board of Health and the University, as well as the City, have a very great interest in maintaining the river in a proper condition.

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579. But it is a question whether you can increase the number as it is in the Conservancy Board, should you be content to be electors instead of sending actual representatives?—I would rather state here what I know to be the opinion of the members of the Local Board of Health than give my own opinion; I know that the highest authorities of the University consider and urge the point very strongly, that they ought to be represented at the Board; I know that the Corporation and the Local Board of Health collectively consider that as their interests will be affected so very materially, and will be very much more affected than they are at the present time, that they ought to have a direct voice in the management of the river.

580. Mr. *Acland.*] Are you speaking separately of the representation of the University as distinct from the Local Board, or of the representation of the University and the City through the Local Board?—I am speaking of both; I know from conversations which I have had with some of the heads of Houses of the University, that they consider some direct representation of the University ought to be provided for in this Bill.

581. The University might probably be represented through the Local Board?—That is a point which I have never been asked to consider; probably the University would be satisfied if they knew that the Local Board was perfectly represented.

582. Mr. *Phinn.*] It is a question of whether there is room in the conveyance for so many members as you wish; do you think that your interests would be protected by your being electors in common with other electors who have an interest in the river?—No, I do not at all.

583. Sir *G. Bowyer.*] All your heads of houses are Thames Conservators, and would therefore be electors of the representatives of the upper navigation, would they not?—From my knowledge of the proceedings of the authorities of the University, who act in connection with the present Navigation Commissioners, I think that would be inoperative, and I say so for this reason, that one gentleman of very high standing in the University was at one time elected to serve on the Oxford District Committee as one of its members, and I believe that it is the fact that during the whole time for which he held that office, he never attended a single meeting. I need not mention his name, but I may state that that gentleman takes more interest in the river perhaps than any other member of the University.

584. Mr. *Phinn.*] Is is true, at any rate, that you have had very little interference by the authorities of the University, or the members of the City, in the actual doings of the Thames Navigation Committee?—I believe that lately the river has become in such a thoroughly dilapidated state that very many gentlemen are disinclined to be connected in any way with the management of the river. They are all aware that the moment they take any personal action, they will be liable for any expenses which will be incurred in consequence of their so acting.

585. During the three and a-half years that you have been an officer of the Commissioners, you have not found the representatives of the City or the University take any part in the management of the affairs of the river?—Not in the management, because, to some extent, the management is carried on by the District Committees, but in the election of the District Committees, the City certainly has taken some interest.

586. When you have got a District Committee, what have they done?—The District Committees (as was explained by the last witness) do not act in the manner in which they did some years ago. Originally, I believe, when the District Committees were appointed, each District Committee was empowered to act irrespectively of the other District Committees. It was found that there are constantly squabbles about the expenditure of money when one District Committee spent more than another District Committee. The plan was not found to work, but for some years before I was connected with the Commissioners, the District Committees were all engaged by a general Committee, so that at last the business was merged in the general Committee. I must say, with reference to the Oxford Committee, I believe that the members attended as punctually as the members of any other district.

587. Passing away from that subject, I will ask you some questions with reference to the mills. Is it, in point of fact, within your knowledge as engineer, that

that the present control by the millers of the water is used prejudicially to the interests of the navigation?—Yes.

588. Do you find, in point of fact, that the millers draw down the water below what they ought, and pound it up sometimes higher than it ought to be?—Yes.

589. Are the mills on the Thames of ancient or modern construction, as a rule?—Of ancient construction.

590. A good many of them have undershot wheels, have they not?—Yes.

591. Which enables them to work the wheels with a very much lower head of water than other mills?—Yes.

592. And they take advantage of that to work when the water is very low?—Yes.

593. Do you think it is desirable that some greater regulation should be given than exists at present?—Yes; I am very chary indeed of trenching on the rights of the millers; in my opinion the interests of the navigation and the interests of the millers ought to be identical, and I think, under a properly devised scheme, the two interests should work very well together. Looking at the full use of the river, I considered that the millers ought not to be overlooked; it is the fact that the mills in very many places support the whole of the rural population; at Sandford, for instance, the population of that village depend very much upon that mill being in a flourishing condition; that is the case with the mills along the whole district of the Thames; I know that great poverty exists at the present time in the neighbourhood of Great Marlow and Bisham, in consequence of a very large paper mill at Temple being unoccupied.

594. You are alluding to the incidental employment that this mill gave?—Yes.

595. And therefore it is not desirable to do anything that would depress the condition of the mill owners?—No; I wish to insist upon that point, because I consider that in a properly matured scheme the interests of the millers are not antagonistic to the interests of the navigation.

596. Do you find that water is sometimes drawn off unfairly for the purpose of fishing?—Yes.

597. Do you think that ought to be controlled?—Yes; I stated in my former evidence that I think powers ought to be given to any managing board to abolish net and buck fishing at weirs.

598. Sir *G. Bowyer.*] Have the Commissioners got that power now?—No.

599. Colonel *Napier Sturt.*] Do you mean fishing by rod and line, or net?—The practice is this, that at night the mill sails are drawn up, and the miller inserts a large wicker work basket, which is called a buck; the water runs through this during the whole of the night, and, from the current being increased, fish are attracted in this direction, and the fish are caught in these bucks; the consequence is that the water is wasted, and occasionally floods are caused on the low-lying lands in consequence of the water being run in this manner.

600. The value of the fish is very small, is it not?—Yes.

601. Sir *G. Bowyer.*] What kind of fish do they get?—The bucks are inserted with a view of getting eels principally.

602. Mr. *Phinn.*] I suppose it is all fish that comes to their net?—Yes.

603. They catch coarse fish, such as chubb, roach, and dace?—Yes, all kinds of river fish.

604. From your observation of the navigation, do you think it important that it should be improved, and are you sanguine that we may look to some revenue from it?—Yes, I am sanguine of that.

605. Have you made any calculation at all as to what might be the result if the navigation were restored and a system of through rates and tolls adopted?—I have not done so recently, but some 12 months ago I made some extremely minute calculations; I can hardly tax my memory with them now, but those calculations convinced me that if the navigation works were put in a proper state of repair, that the traffic will be very considerably increased.

606. Sir *G. Bowyer.*] I suppose the calculations are rather hypothetical, were they not?—They were based upon this fact, that a considerable quantity of coals may be brought from inland collieries to London and further down the river than they come at present; if a rate can be made which would enable the

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barge owner to bring coals direct from the collieries along the Thames to London, there can generally be an up cargo of timber, or groceries, or iron, or corn, or other heavy return cargo taken from London into the upper districts.

607. Mr. *Phinn.*] Do you suppose that to some extent Newcastle coals will come up the river?—Not to any extent, I should think; the principal coal trade at present is the down coal trade from the Midland collieries.

608. But you know that the Great Western are bringing coal to Oxford from South Wales at a very reduced rate, do you not?—Yes; but in spite of that, as you will find by the evidence before the Select Committee in 1865, Oxford county has of late years been in a very flourishing condition, and their principal trade consists of bringing coal from the collieries.

609. Mr. *Peel.*] Is it true that 9-10ths of the coal is brought to London by river?—That is true.

610. Mr. *Phinn.*] You get the Ruabon coal at Oxford, do you not?—Yes.

611. And the Staffordshire coal?—Yes.

612. The South Wales coal?—Yes.

613. The Newcastle coal?—No; the Newcastle coal is carried up the Thames as far as Marlow and Henley; a very small quantity may be taken up to Reading, but it is so small that it hardly deserves notice.

614. Then at Oxford these inland coals have driven the Newcastle coal out of the market?—Yes.

615. What do you pay for coals; take this time of the year, for instance?—I hardly know, but I think from 17 *s.* per ton to one guinea.

616. Is that delivered or at the coal depôt?—That would be delivered.

617. Do you think the river can compete with those prices?—The river at Oxford is not affected by the coal trade; the coals of which I am speaking come to Oxford quite independently of the Thames; the Oxford Canal has a wharf at Oxford, and the coals are brought direct to that wharf.

618. What I was asking you was whether you thought coals brought by water could compete with land-borne coals at Oxford, supposing proper regulations were made for the navigation?—They do compete now.

619. Successfully?—Yes.

620. Mr. *Neate.*] That is by the canal?—That is by the canal; if your question applies, do I consider that if the navigation from Lechlade to Oxford, if that navigation could compete with the railway, then I say no.

621. Sir *G. Bowyer.*] Do you know what sort of coal is principally used in Oxford?—The Moira coal.

622. And Abingdon?—Yes.

623. By what means does that coal get to Oxford and Abingdon?—It gets to Oxford and Abingdon by the Thames.

624. Does some come by rail to Oxford and Abingdon?—Yes, I should imagine so.

625. What coal would come by the Thames; from what colliery would it come if it did come by the Thames?—Principally from Moira.

626. The same sort of coal?—Yes.

627. The same sort of coal would come by the Thames that now comes by the railways?—Yes; I may venture to suggest that a witness, who I believe will be called before you, can give you better evidence on that point than I can.

628. Mr. *Phinn.*] I rather wanted to save multiplying witnesses by availing myself of your local knowledge; do you anticipate that if the navigation were improved, that heavy goods would be brought up to Oxford by water?—Yes.

629. I believe you have had frequent reason to complain of the rates on railways to Oxford?—Yes; and of the delay and inconvenience.

630. You think if the navigation were improved, that would afford the means if a system of moderate rates were adopted, of better enabling the water to compete with the land?—Yes, I may go further and say that the Oxford traders have considered the possibility of forming a company for carrying on their trade on the Thames, and several of them were very sanguine that they should be enabled to get their goods at a lower rate, and carry on their business with a larger profit.

631. Sir *G. Bowyer.*] Are they sanguine now of forming such a company?—It has been abandoned since the introduction of this Bill.

632. Mr. *Phinn.*] Is it abandoned or suspended?—Probably suspended is the better phrase.

633. I must ask you as an engineer, do you believe that a system of navigation on the Thames could be effected with screw steamers, without injury to the banks, as far up as Oxford?—Yes.

634. I suppose you would have to widen the locks, would you not, to some extent?—I think not.

635. Sir *G. Bowyer.*] They would be screw steamers, I suppose?—Yes; at the present time there are several screw steamers working on the Grand Junction Canal, I watched them very narrowly about a week since, as far as I could, in order to see the action upon the banks, and according to my notice, they worked without the slightest damage.

636. Captain *Vivian.*] Do you think screw steamers could work well on the Thames on account of the weeds?—Yes; there is a steam boat working from Reading now, but it is one that has been badly constructed; if a proper and continuous trade were kept up on the navigation, the weeds would be very much kept under, because two or three steamers passing during the week would keep the weeds entirely down.

637. Sir *G. Bowyer.*] Are you aware that the Great Western have adopted, or are about to adopt regulations for the purpose of facilitating the carriage of goods upon their railway, heavy goods as well as other goods?—I am not aware of that.

638. If that were the fact, that would considerably affect your calculations as to the prospect of making the Thames navigation profitable, I suppose?—I think not, for this reason, that I believe the directors of the Great Western Railway would find that it would be to their interest to send their timber and long cumbrous goods by water, and it is possible that they would enter into arrangements with a carrying company on the Thames for that purpose.

639. You mean timber which they would use themselves?—Yes, I mean timber which they carry; timber of such very great length as to be loaded on several trucks.

640. Mr. *Phinn.*] The wear and tear of the line from these heavy goods is considerable, is it not?—Yes.

641. They are very cumbersome besides?—Yes.

642. Sir *G. Bowyer.*] What you say applies not only to timber but to other goods, does it not?—I think so.

643. Do you not think that the Great Western Railway might, with proper regulations compete very successfully with the river, even if the river was improved?—As far as I am aware of the position of the Great Western Railway, I do not think that they can by any possibility carry at lower rates than they do at present.

644. Mr. *Phinn.*] They have got down now to $\frac{6}{16}$ths of a penny per ton per mile for coals from Wales, have they not?—I do not know the exact amount.

645. With regard to weeds, there is an American weed which is a very formidable thing in the river, I believe?—Yes.

646. Do you think if you increased the navigation that you would discourage the growth of that weed?—Yes.

647. Do you think that a screw steamer would be a very potent engine in discouraging that?—Yes.

648. The locks themselves would be dangerous to work, would they not?—Yes, highly dangerous.

649. Therefore, as a condition precedent to bringing anything like an increased quantity of water on the river, it is important that all circumstances of destruction should be seen to?—Yes.

650. Colonel *Napier Sturt.*] Has your attention been called to the state of the lock immediately below Windsor Bridge, known as Romney Lock?—Yes.

651. Captain *Vivian.*] Would it be necessary to widen the locks, if screw steamers were employed?—No; that depends on the introduction of a new kind of vessel, but at present the locks are constructed for the passage of certain boats, and so long as those boats are used the locks are sufficient; there may be a new kind of boat introduced which may require locks of a different construction.

652. But the ordinary screw steamers, such as the one which is now working at Reading, would go through the present locks?—Yes; that works very well.

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653. Colonel *Napier Sturt.*] Is that Romney Lock reported to be in a very dangerous state?—Yes.

654. Mr. *Peel.*] What depth of water would a screw steamer require for this navigation?—That depends very much on the cargo which is conveyed.

655. I presume you would not put any cargo in the steamer itself?—Yes, a small cargo; I can hardly answer that question; I think a gentleman will give evidence, Mr. Woodhouse, who has been engaged in the construction of steam boats; I have not been engaged in that kind of work.

656. I suppose you can hardly say whether you think there would be sufficient depth obtained above Oxford for a system of steam boats to be established in that way?—Not without considerable dredging.

657. Captain *Vivian.*] What is the average width of the locks on the Thames?—Eighteen feet.

658. Mr. *Acland.*] You have told us that the mill interest and the navigation interest would work very well together; are not those two interests adverse to the interests of the land drainage, or are you prepared to suggest any course by which the drainage water can be carried off, without in any degree prejudicing the mill and navigation property?—I think the first thing which ought to be done without delay in this Thames business, is to have a proper and efficient survey made of the whole district; such a survey has never been made to my knowledge; of course all the questions as to the way in which the public will be affected can only be answered on the supposition that such a scheme is possible.

659. When you state broadly that the mill owners and the navigation are equally interested in keeping up a certain amount of water, is it or is it not the fact that that amount of water or that special arrangement is prejudicial to drainage?—It may be made prejudicial to drainage.

660. As a matter of fact is it favourable or unfavourable to drainage?—In some instances, perhaps, it is unfavourable.

661. You stated just now that some parts of the basin of the Thames were very frequently under very prejudicial floods; to what cause do you attribute that?—To the great excess of rain fallen.

662. What is the condition of the outfall; are you prepared to say that that has nothing at all to do with impeding the outfall?—Not at all; on the contrary, I consider that the question of regulating the floods is one that ought to be taken into consideration.

663. Then, in fact, those floods are due to the impediments in the outfall?—Yes, no doubt.

664. Are those impediments caused by the mills on the navigation?—Yes.

665. Do you think they admit of removal without sacrificing the navigation altogether?—They admit of removal to a great extent.

666. Now, with regard to the mill interest, have the owners of mills on the Thames any ancient rights enabling them to control the sources of the river, or are such rights, if any, merged in the Acts of the Legislature under which the river is now administered?—I am not aware that they have any rights for controlling the sources of the river, if by that you mean the Thames heads, and the sources, or tributaries; I may in reply to your question mention a circumstance which occurred a short time ago at Buscott Park; Mr. Campbell, the owner, proposed, or it was thought he intended, to abstract water for irrigation purposes; the Oxford Local Board of Health, the University, and I believe some mill owners considered the question, and I understood they were advised that they had no power to interfere.

667. Has your attention been directed to the question of the quality of the water in the Thames, and to any risk that may suppose to be incurred of the supply of water falling short in the Thames?—Yes, I have heard some of the statements to that effect.

668. Can you give us any information that bears on this Bill?—I believe those statements are, many of them, made on very unsound information; there are at the present time men who have been living on the river over 50 years, and they tell me they see no diminution in the supply of water to the upper districts.

669. Have you any acquaintance with estate management?—Not very great.

670. Has it come under your observation that increased drainage has affected in any way the evenness of the supply or flow of the water, either by way of

of increasing it or by way of diminishing it?—That has not come under my personal notice.

671. With regard to the purification scheme, of which you speak, are you prepared to say, that for the purpose of the best and most economical management of the sewage of towns on the Thames, that it is better that the disposal of that sewage should be in the hands of other companies, or that it should be under the hands of the Local Boards themselves?—That is a general question that I am not prepared to answer.

672. You gave us just now some opinion as to the advantage of this new scheme; I want to know what the advantages are of having this power of irrigation placed in another body; I want to know whether there is any ground for supposing that another body, which must of course employ another staff of officers who must be paid, can do that as economically as the town itself?—That was especially with reference to the case of Oxford; I stated that in that case I considered it would be advantageous for the Local Board to make terms with this company, because it would very considerably lessen their expenditure.

673. Sir *G. Bowyer.*] You mean supposing that that company was floated?—Yes, and really got rid of the sewage.

674. Mr. *Acland.*] On that ground should you think that the sewage of Oxford could be more economically disposed of by selling to another body than by managing it themselves?—I consider that in that case it would be more economical, for this reason, that the Thames Purification Company, as I understand their proposal, intend to share the profits with the Local Boards of any town from which they may obtain sewage.

675. Are you prepared to give your opinion upon inquiry that there is any profit to be derived from sewage?—That is a very wide question, which I have not gone into.

676. Then, in point of fact, you are not prepared to give any opinion upon that subject?—No.

677. Lord *Eustace Cecil.*] With regard to the sewage, are you aware of any mud banks having been formed by the deposit of sewage in any large towns in any part of a river?—Yes.

678. And the river having been made unwholesome in consequence?—Yes.

679. Can you mention any particular portions of the river where that has occurred?—In certain of the minor streams in Oxford that is the case; it is the case to a very great extent in the Kennet at Reading. It is also the case immediately below Windsor.

680. Do you suppose that if a screw steamer, or any other steamer, were allowed to navigate over those portions of the Thames, the motion of the wheels or of the screw would seriously vitiate the water by disturbing these mud banks and sewage?—No doubt, if the sewage exists, as it does at present, because of course it must be in a constant state of motion.

681. Mr. *Acland.*] Is the river polluted now, so as to destroy the fish to a considerable extent in the river?—Trout are very scarce, but I believe trout will not come where there is any sewage.

682. Lord *Eustace Cecil.*] You believe there is a very serious diminution of fish in consequence?—There is a very serious diminution of fish in the river; whether it arises from sewage or not, I cannot say; I do not think it is possible for any person to make such a statement.

683. Mr *Acland.*] Is there any refuse from the paper mills carried into the water?—Yes.

684. Have you the means of knowing whether that destroys fish?—Yes, I know that it does destroy fish.

685. Mr. *Neate.*] Is it within your knowledge, as a Member of the Local Board, that an opinion was given by a lawyer, that an upper landed proprietor might divert the water of the Thames for the purpose of irrigation?—I hardly recollect what that opinion was.

686. As a fact, was there an opinion taken by the Local Board upon that subject?—Yes, there was an opinion, but I am not aware what it was.

687. As a matter of fact, in the case to which you refer, there was no water taken for the purpose of irrigation?—There was none taken.

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Cross-examined by Mr. *Brett*, on behalf of the Chelsea Water Works.

688. Will you allow me to ask you a few questions about expenditure; in this scheme have you been consulted about the expenditure that would be necessary under this Bill?—Do you mean under the "Thames Navigation Bill," that we are now considering?

689. Yes?—I consider that indirectly I have been consulted about it; I suppose that the Bill is framed on my estimate that was made last year.

690. The Bill is framed upon your estimate?—I presume that it is.

691. That expenditure would have to be divided into primary expenditure, putting the works in order and constructing works, and into an actual expenditure of keeping them up, would it not?—Yes.

692. That expenditure must depend on what the Conservators have to pay in order to make the river do what it ought to do, and in order to prevent it from doing what it ought not to do?—Yes.

693. What is it that the river ought to do; it ought to supply sufficient water for the navigation, ought it not?—Yes.

694. And I think you say it ought to supply water for trade purposes, such as mills?—Yes.

695. And it ought to supply water for the consumption of towns?—Yes

696. Is there anything else which you can suggest that a river ought to do?—It ought to be used for the purpose of irrigating land.

697. Then what it ought not to do is to flood the low lands, as I understand you?—Yes.

698. It ought not to be allowed to do that?—It ought not to be allowed to do that so far as it is practicable, but it is quite absurd to suppose that floods can be entirely prevented.

699. It ought not to be allowed to bring down injurious sewage past towns or through towns?—No.

700. Now, as to the navigation, the expenditure for the purpose of preserving the navigation must consist of constructing or keeping of locks and weirs, and in keeping up the banks and dredging of the river, must it not?—Yes; hardly keeping up the banks under the present arrangement; that is supposed to be a landowner's question, and not a question affecting the Navigation Conservators.

701. Are you of opinion that any plan for preserving the navigation of the Thames could be effective without some power being given in order to preserve the banks?—Certainly not.

702. Then you would recommend that they have power to preserve the banks?—That they should have power to prevent the banks washing away in places which would be injurious to the navigation.

703. With those powers, you think it would be only fair to the landowners to do it?—That depends on very many considerations.

704. I want to know what consideration you have given to that question; would not the expense be very different under the two bodies, whether the Conservators had to do it, or whether the landowners had to do it; I mean the fund which would be required to be raised by the Conservators?—I do not think that the landowners would find it to be their interest to expend money in keeping up the banks.

705. For the purpose of securing the navigation, you would recommend that the Conservators had power to keep up the banks?—To keep up the banks in such a way as to prevent injury to the navigation; but I certainly would not tax the Conservators with the expense of repairing the banks along the whole of the river; I would not tax them indiscriminately.

706. As to the locks and weirs, you say that you have made an estimate of what it would cost immediately to prevent accidents; as I understand you, what it would cost immediately to put the navigation in order is 30,000 *l.*?—Yes.

707. Does that expenditure apply only to the locks and weirs?—Yes.

708. Only?—Only.

709. Then that is not taking into account any expense for repairing the banks where they now require it?—No; it takes into account the dredging in many places.

710. To put the navigation into order, would there be a considerable quantity of

of dredging required in different parts of the river to deepen the channel?—Yes.

711. Do those 30,000 *l.* comprise all the dredging that will be necessary, in order to make a deep channel?—No.

712. I mean in order to make a navigable channel the whole length?—Yes; a channel navigable on the present arrangement with the Thames.

713. That is throughout its whole length?—Yes.

714. I think you said that you had made a careful estimate of that 30,000 *l.*?—Yes; I should explain that the 30,000 *l.* applied to works which were under consideration last year.

715. So I understood?—Section 42 of the Bill now under consideration alludes to additional works which did not enter into my scheme.

716. I quite understand that; that 30,000*l.*, as I understand you, comprised the construction or the repair of weirs—the present locks and weirs—and an amount for dredging in order to make a channel up which or down which the navigation should go?—Yes.

717. It does not comprise anything with regard to the repairs of the banks in their present state or condition?—No.

718. Your statement would be correct if you make it apply to the navigation works?—It applies only to the works at present in the hands of the Navigation Commissioners.

719. Then I want to know this: in your judgment what other works are required for the purpose of making the navigation?—Section 42 of this Bill states the property to be locks, dams, and weirs which are now at present vested in the Conservators or in the Commissioners.

720. Does the 30,000*l.* apply to those?—Not at all.

721. Will you tell me the whole cost, if you have made an estimate, of putting the river into a state for the navigation to be carried on now?—I have not made any estimate with reference to the works that are proposed to be vested in the Commissioners under this Bill; the additional works.

722. Then you have made no estimate of what it would cost to make the Thames navigable from one end to the other?—Yes, I have made an estimate with reference to works at present held by the Navigation Commissioners.

723. You have not made an estimate of what it would cost to render the river navigable?—Yes; I consider that that would render the river navigable.

724. Forty thousand pounds would render the river navigable?—From 30,000 *l.* to 50,000 *l.*

725. Mr. *Peel.*] But that would not be the cost of the obligations imposed under this Bill?—Quite so.

726. Mr. *Brett.*] Do you mean obligations with regard to navigation only or other obligations?—That is a point on which there may properly exist a difference of opinion, until some survey of the river is made, and some plan is laid down for its proper management.

727. Have you made any estimate of what the annual cost of keeping the river fit for navigation would be?—I have not made any estimate of what the annual cost would be under this Bill.

728. Now, you say that the river ought to be able to supply the mills, and to give them a sufficient quantity of water?—Yes.

729. And it ought to give a sufficient quantity of water for the supply of the towns, ought it not?—Yes.

730. You do not take lands at all, but do you not take all the towns upon the river; have they not just as much a right to be supplied with water from the river as London?—Certainly.

731. And many of them are?—No; at the present moment, I think, not any of them; the supply is from lakes which are found a short distance from the river.

732. Is not Kingston supplied from the river?—I am speaking of districts under my superintendence.

733. The supply of water for the purpose of towns and mills ought to be equalised, so as always to have a sufficient quantity of water?—Yes.

734. Can you do that without keeping the banks in order?—To some extent.

735. Should you not think, in order to make that constant supply effective, that the Conservators ought to have the power of keeping the banks of the river in order?—

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order?—The value of the land is very trifling in comparison with the cost of the banks; I think the Conservators had far better spend the money in dredging than in protecting the banks; I do not think it would be to the interest of the landowners to protect their banks with any very expensive works.

736. Now I come to what you say you want to prevent; what you want to prevent is the improper flooding of low lands; must you not keep up the banks for that purpose?—It may possibly be necessary to construct small embankments.

737. But for the purpose of keeping the river free from sewage, I understood you to say that no expense ought to fall upon the Conservators for that purpose; is that so, or do you anticipate that they must be put to some expenditure for that?—No, I do not anticipate that.

738. You see you have told me that you want 30,000 *l.* for the purpose of making the river navigable, and you have made no estimate of what you want for the other purposes of the Bill?—I have not been consulted on that point, but I believe some other engineer has.

739. Then you have not formed any opinion of what it would require?—No.

Mr. *Phinn* stated that Mr. Leach, the Engineer of the Conservators, had made a report on the subject.

740. Mr. *Brett.*] You have made no estimate of the income to be derived from the use of the river?—No; I have not.

741. In your evidence before you seem to think that the income from the receipts of the navigation might be raised to somewhere between 15,000 *l.* and 16,000 *l.*; if you look at page 279 of the Rivers Commission Report, you will find that; the number of the question is 8692?—I am there alluding to what the receipts were when the navigation was in a flourishing condition.

742. Do you anticipate that if the navigation were put into a flourishing condition, and kept in a flourishing condition, that the income to be received from the navigation would be equal to what it was before?—I think in time it would amount very nearly to that.

743. Then it would amount in time to 15,000 *l.* or 16,000 *l.* a-year, or in time to very near that amount?—I think it quite possible that it may reach that amount again.

744. Then at that time, I see in answer to 8694, you are of opinion that the navigation could be kept up for half that amount or less than that, that is 15,000 *l.* or 16,000 *l.*?—Yes.

745. Have you any doubt that if the river was put into a proper state, and the navigation kept up, that it might be kept up in that state for the sum of from 7,000 *l.* to 8,000 *l.* a year?—I cannot answer that question without referring to the liabilities under this Bill.

746. You have made no estimate of the liabilities imposed by this Bill?—No.

747. No estimate at all?—None whatever.

748. No estimate of the liabilities imposed for preserving the navigation?—No; my statement that it would require less than half the amount, 15,000 *l.* or 16,000 *l.* a year, had reference to words which I have alluded to before.

749. As I understand I may sum it up thus, as far as the finances of this Bill are concerned, you have made no estimate of what the annual expenditure would be under this Bill?—No.

750. And you have made no estimate at all, of what the receipts would be under this Bill?—No.

Wednesday, 6th June 1866.

MEMBERS PRESENT:

Mr. Acland.	Colonel Gilpin.
Sir Michael Hicks Beach.	Mr. Neate.
Sir George Bowyer.	Mr. A. W. Peel.
Lord Eustace Cecil.	Colonel Napier Sturt.
Mr. Milner Gibson.	Captain Vivian.

THE RIGHT HON. THOMAS MILNER GIBSON, IN THE CHAIR.

Mr. *James Castle*, re-called; cross-Examined by *Dr. Adams*.

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751. BEFORE you were appointed Surveyor to the Commissioners of the Thames, you had been residing in Oxford some time, I believe?—Yes.

752. You are well acquainted with the district around Oxford?—Yes.

753. When you were appointed the surveyor, were the documents connected with the office of surveyor to the Commissioners handed over to you?—The public documents belonging to the Commissioners were handed over to me; I was informed that there were several documents which my predecessor considered to be his private property, which were not handed over to me.

754. Have you any plan which shows the river as it originally was, and as it was altered by the Thames Commissioners?—No.

755. Has there ever been such a plan, as far as you know?—No.

756. You have before you a small map which shows the streams close to Oxford, as they at present exist?—Yes.

757. That map has been taken out from the report to which we referred yesterday, called Mr. Pusey's Committee Report?—Yes.

758. Are you aware of the boundaries between Berkshire and Oxfordshire, in the neighbourhood of Oxford?—Yes.

759. Point out, if you can, on that map, the stream which forms the county boundary?—It is the stream which is now simply a mill stream, on which Wytham Mill, Botley Mill, and Hincksey Mill now stand.

760. It is the westernmost?—Yes.

761. Part of it is called the Old River, is it not?—Yes.

762. Is that below what is called the Four Streams at Oxford?—The Four Streams joins the navigable part of the river, about midway along the stream, of which you are speaking.

763. As it runs downward it comes to what is called the Old River at Ferry Hincksey?—Yes.

764. The high land is on the Berkshire side?—Yes.

765. And the westernmost branch of that river runs very nearly to the high land, does it not?—Yes.

766. All between that is floodable land?—Yes, all between that and the present navigable stream.

767. From looking at that map, and the knowledge of the localities, is it not clear to you that from the point of Folly Bridge up to above Godstone Lock, and where the Botley stream joins what is called the canal, a great deal of work

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has been done to make that a navigable stream?—I am not able to speak at all as to what happened many years ago; all I can say now is, that the other stream is now a navigable stream.

768. The easternmost stream?—Yes; I should imagine, from the mill being now situate on the other stream, that it must have been very many years ago when that was a navigable stream; of course that is only mere supposition on my part.

769. When you find that the division of the shire runs up the main stream up to Oxford, and that there are the remains of a large old stream still existent from the level of the country, does it not appear to you that the navigation was brought to the eastward of the main stream?—I do not see in what way that is made clear.

770. I will put it to you in this way: look at Four Streams; is there not a dam upon the stream that runs to the west?—Yes.

771. If that dam had not been there, would a single drop of water in ordinary times have ever reached Oxford?—Yes.

772. How much?—A small quantity, perhaps.

773. Would it not be a very small quantity?—That weir is necessary now, to keep a sufficient quantity of water for the purpose of navigation.

774. So that if nature had been allowed to have its own way the water could have gone down that arm of the Four Streams and not down through Oxford, to a great extent?—The widest stream now is the easternmost stream, certainly.

775. That has been made a canal?—Yes.

776. In passing up the river from the Four Streams up to Godstone Lock, are you aware whether there are not many places where dams have been put across, to prevent the water going to the westward?—Yes, there are one or two small sized streams that have been dammed up.

777. Now take Medley Lock; you know the old farm house which has recently been purchased by Christ Church?—Yes.

778. Are you not aware that there was a stream there 10 feet wide, which was entirely obliterated?—No, I am not aware of that.

779. Personally, you are not aware of that?—No.

780. Should you be surprised to learn, looking at the general fall of the country towards the westward, that that has been done?—I know that at the present time a small ditch exists at the point of which you are speaking, in which there is a sluice; but I understand that that sluice has been placed there to prevent the flood-water overflowing the farm of which you are speaking.

781. But above that there is another place where there is a dam, is there not?—Yes, above that, a place which is known as Black Jack's Hole.

782. Is not the effect of all this damming at that point of the river to make a large quantity of water find its way close to the city of Oxford, instead of going down by Hincksey Mill?—Yes; in addition to that it protects the tail of the stopped mills.

783. Lord Abingdon's mills?—Yes; those streams run into the tail water of the mills, and probably the millers were quite as anxious to have that water as the Navigation Commissioners.

784. You are aware that St. John's College has a considerable quantity of property lying between Port Meadow and the canal?—Not between Port Meadow and the canal, I believe.

785. Yes, the meadows that run along the side of the proposed railway?—You mean the fields that are known as Trap Grounds?

786. Yes?—Yes.

787. Is not the effect of damming up the water in this way to throw back upon these meadows a large quantity of water, which otherwise they would have had nothing to do with?—I have not sufficiently considered that question to be able to answer it, but probably your statement is correct.

788. Supposing the dam is taken away at Four Streams, would not that relieve the meadows lying to the northward, close to where the railway crosses that arm of the Thames below Port Meadow?—Perhaps to a small extent it would relieve those meadows, but to a very small extent.

789. A matter of a foot?—I think not.

790. Has it not also, by damming up the streams in this way, sent a large quantity of water to the mill owners in Oxford city?—Yes.

791. It has very much benefited them?—Yes.

792. And that at the cost of the surrounding land?—I hardly know in what way at the cost of the surrounding land.

793. Has not Port Meadow lost as much as 20 acres by the encroachments of the river, caused by the deposit at Medley Lock?—I think that the washing away of the banks at Port Meadow has been caused partly by the river having silted up and by the flood water having spread.

794. That silting up was caused by Medley Lock, was it not?—Not necessarily.

795. Will you say it was not?—Yes, I think, I can say it was not, for this reason, that in flood time Medley Lock is always thrown open.

796. But supposing that a summer flood comes by the river bank up to the city of Abingdon, it brings a great quantity of silt with it?—Yes.

797. If the lock is not drawn, would there not be then a great accumulation of silt in the bed of the river?—Whenever there is a flood, and the water rises above a certain height, the lock is drawn.

798. That is to say, it is required to be drawn?—Yes; and I believe it always is drawn.

799. Do you not know that it has been a source of constant complaint that people connected with the locks above and below Oxford, do not draw the locks when the floods come?—They do not anticipate the floods sufficiently.

800. And as the floods arise, they do not draw till the water gets to the top?—I know that to be the case.

801. So that when a flood comes down, it does not absolutely go over the surrounding land; they do not draw, but they let it subside gradually by itself?—Yes, that probably is the practice.

802. Would it not have a great tendency to cause a silting deposit in a pound like that from Godstone Lock to Medley?—Yes, perhaps it would.

803. The result of that would be to take away from the freemen of Oxford and the landowners, a large portion of their land?—Yes, but I think according to your own statement that shows that with better management of Medley Lock those evils might be prevented.

804. Quite so; if there were Drainage Commissioners, whose duty it was to see that the river never went above a certain level, you think probably then, that those deposits would not be allowed to accumulate?—Not only with Drainage Commissioners, but under the Navigation Commissioners, provided they had sufficient facilities, that silt would not be allowed to accumulate.

805. What interest have the Navigation Commissioners in attending to the drainage of the district?—As a mere question of drainage, perhaps not any.

806. The river, I take to be managed by the Commissioners now for the purposes of navigation?—Yes.

807. They fix the heights of the high-water mark and low-water mark, not with reference to the drainage of the district, but with reference to the navigation which is supposed to come on the river?—With reference to both.

808. What have they to do with the drainage?—They have to fix their mark, so that ordinary water shall not overflow the land.

809. Has not this been done to your knowledge, that they have fixed the high-water mark at exactly what they call bang level?—In some few instances that is the case, but perhaps not as a generel rule.

810. Is it not frequently the case in that part immediately above Oxford?—Will you call my attention to some special case?

811. Take Skinner's Weir?—Yes.

812. Pinkhill Lock?—Pinkhill Lock is not very high.

813. Is not Pinkhill Lock absolutely higher at this moment than the back of the meadows?—That is the case frequently, but then it must not be forgotten that the banks of the river are very much higher than the meadows at some distance.

814. You agree with the majority of the witnesses who were examined before the Commissioners, I have no doubt, that those banks have been raised from the flood going gently over it at first, and depositing the first of the silt?—Yes.

815. Those floods, according to what I shall have to contend, being caused by the obstructions created by the river for the purposes of navigation, the

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Commissioners after that have fixed the level with reference to the height of the bank, and not the hollow of the level?—Yes.

816. So that, in truth, the Commissioners have availed themselves in the Act of the floods, for raising the water level, by fixing the level in this way. They have availed themselves of the natural position of the river as it flows, for the time being?—Yes.

817. All the way along, taking it above Oxford, and even above Oxford, is it not the fact that when you get about 100 yards from the river the meadow is low, and is what is called hollow-backed?—Yes.

818. And in that part the water stands a very long while?—Yes, that is where there is no system of drainage carried on.

819. Is it not very difficult, with the system of locks which is at present existing, or must exist for the purpose of navigation, for the owners of the land to get those waters off from the back parts of the meadows?—There may be difficulty on the part of any one individual landowner, but if the landowners combine together I see very little difficulty.

820. What course would you take to do it?—By simply making cuttings to the lower level.

821. Do not the Commissioners always insist upon it, that nobody can enter their river except at the points that they please?—I am not aware of that.

822. You do not know of that in your time?—No.

823. The fact is that since you have been surveyor they have been moribund?—I have stated in my former evidence that since I have been connected with the river I have seen no lack of energy on the part of the managing committee; I have observed that they always attend to their duties and carry out the works; I thought you alluded to the Upper District.

824. I was speaking of the Upper District?—I was about to say that in my time the Upper District has been comparatively neglected; very few repairs indeed have been performed in that district.

825. Are you aware of the provisions of the General Drainage Act of 1861?—Yes, I know some of the provisions generally.

826. You know that no commission of sewers for a district can be formed on a river where there is already a board of commissioners, except with the consent of that existing board of commissioners?—You mean the Navigation Commissioners, I presume?

827. Yes?—Yes.

828. Since you were appointed, have you had any applications with reference to the formation of such districts?—There have been applications with reference to embanking certain districts.

829. Have there been any with reference to the formation of drainage districts?—Not to my recollection.

830. The district which I mentioned yesterday of Standford, Harcourt, and Northmoor, has there not been an application to the Commissioners for the formation of a drainage area there?—I am not aware that there has been any application for the formation of a drainage area beyond the formation of the embankment for the purpose of keeping off the flood water, but I do not think any drainage scheme was brought before the Commissioners.

831. I must refresh your memory about that; did you not attend with a number of Commissioners at New Bridge, and from New Bridge down to Pinkhill Lock?—Yes.

832. Were you not informed that the intention of the landowners was to form a drainage area between those two places?—A drainage area, so far as the embankment is concerned; I am not aware, and I believe I am correct, that any application at all was made to the Commissioners as to any system of drainage within the embankment.

833. Was not the outfall of this drainage area much below the present place where the water was delivered into the river?—You mean that the embankment stopped just about Pinkhill Lock?

834. Yes?—Yes.

835. Would the delivery of water there be at a lower point than the point at which it would otherwise have found its way into the river, if it had not existed?—The floods from the Windrush would be brought to that point, instead of coming across the meadows.

836. Without

836. Without the consent of the Commissioners, the existing landowners would not have been able to have made that embankment?—Yes.

837. That is your view of it?—Yes.

838. Sir *G. Bowyer.*] Do you mean to say that they would have been able to have made that embankment, or that they would not have been?—They would not have been able to have made it without the consent of the Commissioners.

839. Dr. *Adams.*] By the present Bill that you are here to support, is any provision made for landowners obtaining this consent?

Mr. *Phinn.*] You may take it that there is not.

840. Dr. *Adams.*] From your knowledge of the Upper Districts, would it not be essential for the owners of land along there, that they should have the power of draining their lands which are now thoroughly water-locked?—I have stated on several occasions that, in my opinion, the navigation interest ought not to be antagonistic to the land interest or any other interest, but that the two may work together.

841. As at present suggested, it is antagonistic to the landed interest?—Probably it is.

842. Is it not the fact that all the water marks above Oxford are put so high that it is impossible for the landowners, without great expense, to drain the lands lying alongside the river?—I hardly like to answer a general statement of that sort; I would rather you point out some particular district.

843. Do you know the district above Lord Abingdon's Weir, which is called Skinner's Weir; you will find a weir marked Langley or Skinner's Weir about half a mile above Pinkhill?—There are two weirs known as Langley Weir, and there are two weirs known, I believe, as Skinner's Weir.

844. It is the lower one of the two that I mean?—So far as I am acquainted with the ownership of the weir, the weir which belongs to Lord Abingdon is the one close to Ensham Bridge.

845. And above too?—I always supposed that the lock above Pinkhill belonged to St. John's College.

846. No; it is the weir above that?—Yes; the lock in the middle of the Cumner Meadows.

847. At that point there is a considerable flood at all times of the water, is there not?—Yes.

848. And that flood extends up to the Ark?—Yes; I know the position of it.

849. At the Ark there are the remains of an old weir?—Yes; at a little distance above there is some rising ground.

850. On both sides up to the Ark the flow of water extends very largely, does it not?—Yes.

851. Is it not the fact at this lower weir, which I called "Skinner's Weir," the water mark is put so high that if there comes a flood in the summer, the whole of the meadows, and the hay on them, is ruined for that year?—I cannot speak personally that such a thing as that happens.

852. Have you examined that plan?—Yes.

853. You recollect it being reported by your predecessor that Pinkhill Weir was 1 foot 6 inches too high?—Some years ago.

854. Yes?—I do recollect some reference being made to Pinkhill.

855. It has never been altered?—No.

856. Have you never altered it?—No.

857. From there up to the lock or weir that is owned by St. John's College, which is called "Ridge's Weir," there is a long line of low land on the Oxfordshire side, is there not?—Along North Moor?

858. Yes?—Yes.

859. Is not that very injuriously affected by the height of the water at that weir?—I have heard that statement made by persons residing in the district.

860. Now, you go on from that weir up to Newbridge; above Newbridge, is not the river almost stopped, as regards navigation?—There is very little navigation between Newbridge and Duxford Weir.

861. Did you ever know in the course of your time a boat to go from Newbridge to Duxford?—I have never seen a boat pass along there; but I know

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that the person who lives at the ferry at Duxford is a coal merchant, and his coals are conveyed by river; I believe a portion of them comes from Lechlade, and also a small portion I believe goes up.

862. Have you ever examined Limber's Weir?—Limber's, or Rose's, it is called; you mean the one next to Newbridge?

863. Yes?—Yes.

864. Is not that impassible; could a boat be got through that weir at this moment?—Yes, I believe so; I have not seen it for some months now.

865. Have you ever known that a boat did go up there?—Yes, I presume boats go up there, and I say that because Mr. Rose lives at Duxford and has occasionally coals taken from the Oxford Canal.

866. Would you be surprised to hear that there had not been a boat up there for five years?—On whose authority is that statement made?

867. Supposing I call witnesses to prove that, should you be astonished?—I put that question to you, Sir, because I have myself frequently passed that weir when the weir-keeper has not been there; the weir-keeper works for a farmer in the neighbourhood; he is a fisherman, and he is frequently away from the place, so that it is possible for boats to pass.

868. It is in a very dilapidated condition, is it not?—Yes.

869. It is one of the most dilapidated of the old weirs, is it not?—Yes; it is a very bad one.

870. Are you aware that some years ago, when Stanlake was enclosed, very large works were erected there for the purpose of draining that district, by the late Mr. Woolley?—I have no knowledge of that.

871. You know the embankment?—Yes.

872. You know the straight cuts?—Yes.

873. Have you any knowledge of the country before those cuts were made?—No, I have not.

874. Had you ever been to Stanlake before those cuts were made, so as to know what sort of a district it was?—I knew Stanlake perhaps 15 or 16 years ago.

875. What state was it in then; was it drained as it is now, or not?—I am not able to speak accurately of what it was 15 or 16 years ago, but at that time I recollect it was always in a very swampy and flooded condition; I have frequently had occasion to drive that way on my road to Osney, and I have been stopped by the floods across the public roads.

876. Since these works which I have mentioned have been effected, I believe that the place is very much drier, is it not?—Yes.

877. And rendered much more healthy?—Yes.

878. A great quantity of land has been brought into cultivation in consequence, has there not?—Yes, I believe that to be the case.

879. Now, you spoke about the traffic; where do you suppose that the traffic is to come from that is to yield the revenue for this hypothetical sum of 30,000 *l.* which you have talked about?—Are you speaking now with reference to the Upper District?

880. I take the whole river; where do you suppose the traffic will come from to pay the interest upon the 30,000 *l.*, and find the working expenses?—Downwards from the inland collieries, and upwards from London.

881. I will take you downwards; the coal comes to Oxford from the Moira Colliery?—Yes.

882. Are you not aware that the Moira Colliery is principally situated on the Canal at the present moment?—Yes.

883. And that that has no communication with railways?—No, I am not aware of that; I do not know the colliery, but I know that a quantity of coals comes by railways to Oxford.

884. Is that from the principal pit?—I think, if you will allow me to suggest it, that you will get that information much better from the agent of the collieries than from me.

885. At this moment are you aware that there is a railway company in the next room proposing to make a line of railway right through those very collieries which have been supplying Oxford, by water?—I was not aware of that, but I know that the gentleman to whom I allude is engaged in the next room to this; I do not know upon what business.

886. The

886. The Midland and North Western are fighting in the room adjoining to us, as to which is to have the making of a railway through the very district that you say now supplies Oxford, by water?—I was not aware of that.

887. Mr. *Phinn.*] It is the Nuneaton and Derby line.

888. Dr. *Adams.*] Have you learnt what amount of coal comes into Oxford by railway in comparison with what comes in by water?—I cannot speak with any certainty.

889. Is it not more than half; is not the Railway Company continually increasing its delivery of coal in Oxford?—Do you mean from the west of England?

890. No, from the Midland districts?—That, I think, Mr. Woodhouse can give you information upon better than I can.

891. You have given us some evidence about it, therefore let us have what you really know about it?—I was not aware that so large a proportion as that came by railway.

892. Are you not aware that the quantity of coal that comes into Oxford by railway, by the North Western in particular, is very much increasing?—Yes, I know that.

893. Do you know that the Great Western, up to a very recent date, has carried very little into Oxford?—Yes, I believe that is the case.

894. Are you aware that the Great Western have now a means of communication with the Midland Company and Birmingham, so that the Midland Company can convey their coal over the Great Western to Oxford as well as the North Western to Oxford?—Yes, I know that.

895. Up to a very short time ago the North Western was the only means of communication that the Midland had to Oxford?—Yes.

896. The coals that you are speaking of are included in what is called the Midland Railway Company's district?—Yes.

897. They are the Derbyshire coals, the Leicestershire coals, and the Yorkshire coals which come principally to Oxford; is that not so?—I was not aware of any Yorkshire coal coming.

898. Do not the South Yorkshire send some small quantity to Oxford?—I do not know that.

899. I believe there are no Staffordshire coals which come to Oxford now?—That I do not know.

900. Is there any coal from the Forest of Dean which comes from Oxford?—I believe there is.

901. Where from?—From the Swindon line.

902. Round by Didcot?—I believe so.

903. That is a very small quantity, is it not?—Yes.

904. That is a very small quantity, is it not?—Yes, it is a small quantity.

905. Now, you state that a considerable quantity of coal goes round by Oxford to Abingdon?—Yes, and by Pangbourne.

906. By river?—Yes.

907. Is it not the fact that it is impossible to get the Midland coal from Oxford to Abingdon by railway without a change?—At the present time?

908. Yes?—Yes.

909. Are not the Great Western making the Abingdon branch upon the broad guage?—Yes.

910. And, by that means, shutting out all communication from the Midland district for coal?—Yes; at the same time, I may say that the Abingdon coal merchants, with one exception, very much prefer having their coals by water to having them by rail.

911. You spoke about Wallingford; is it not the fact that Wallingford is four miles from a railway?—About four miles.

912. Is there not a railway now making to the town of Wallingford?—Yes.

913. It is just open, is it not?—It is near completion; I am not aware whether it is actually open or not.

914. At any rate, the opening is announced?—Yes.

915. Do you know whether that is made on the broad guage or on the narrow guage?—On the broad, I think; I am not certain.

916. If it is made upon the narrow guage, will not the tendency of that be to take

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take a considerable quantity of coal by the railway?—Yes; I may say that the coal merchants of Wallingford are particularly anxious about the fate of this Bill in the House of Commons.

917. They want to use it as a screw upon the Great Western?—Yes.

918. I presume, if they can get their coal carried cheap by the railway company, that they will have their coal carried by railway, and not by the river?—Probably they will.

919. Captain *Vivian.*] Do not coal merchants generally prefer sending their coal by water rather than by rail, on account of the destruction caused to it when carried by railway?—Yes, in all cases.

920. Sir *M. Beach.*] Is not the loss by transferment from one truck to another calculated at 30 per cent.?—I am not aware what the average is; it depends very much on the kind of coals; there is very great waste indeed when it is carried by railway trucks.

921. Dr. *Adams.*] You convey no coal down to Reading by the river, do you?—A very small quantity; very little now passes beyond Pangbourne downwards.

922. I think you told us yesterday that you thought if the river were improved above Oxford, that coal would go upwards from Oxford as far as Lechlade?—I do not think I made that statement; I meant that it would go up in the direction of Lechlade; I did not intend to say that coals would go from Oxford right through to Lechlade.

923. My friend, Mr. Phinn, asked you this question at 533: "As I understand you, if that navigation were stopped, the Lechlade people would be rather hard put to it for coals and other things," to which you answer, "I imagine they would"?—That is the navigation below the Severn.

924. No, it is the other way. As a matter of fact, did you ever hear of a cargo of coals going up the river to Lechlade?—No, because the coals supplied to Lechlade come from the Severn; I think you will find upon referring to my answer, unless I misunderstood the question that was put to me, that that was what I intended to say yesterday.

> Mr. *Phinn.*] I think in justice to the Witness I should call attention to a previous answer at 527: "Can you tell us what the traffic on the river between Lechlade and Oxford consists of?—Principally coals, which are taken from the Oxford Canal up to Newbridge; they are coals which are brought from the Severn districts to Lechlade, and for a short distance downwards; there is also some slight traffic brought to Buscott Park."

925. Dr. *Adams.*] As you have explained it, it does not matter. Now, you have also said that you thought it was for the interest of the landowners and the residents of that district that the navigation should be kept up above Oxford?—Yes.

926. And you stated as a reason for that, because there was no line of railway coming into the district?—Yes.

927. Is it not the fact that the Witney Railway is being joined, by what they call the East Gloucestershire?—Not very near to the river.

928. It takes every town which is in the district; is not that so?—But on the Berkshire side there is still a large district between the river and the Great Northern Railway, which may fairly look to the river for its supply of coals.

929. Is there not what they call the Faringdon Railway which supplies that district also with coals on the Berkshire side?—Yes; but between Faringdon and Abingdon there is a large district lying between the river and the railway.

930. The population is very scanty in that district, is it not?—Yes, it is very scanty along the whole of that district.

931. The farmers when they buy coal, buy it at their market towns, do they not?—I believe it is generally the practise with farmers to take corn into the market and cart coals back.

932. The markets in that district on the Berkshire side are Faringdon, Abingdon, and Oxford, are they not?—Yes.

933. If they attend those markets and deliver their corn at the railway stations, is there much traffic to be expected from the river in coals; would they not buy their coals at those markets?—I should rather think that a farmer taking his corn from Kingston into Oxford would not tax his horses by carting coals back.

934. Is not Kingston a very easy draft to Abingdon?—I am speaking now with reference to the farmers taking their corn into Oxford market.

935. Suppose they deliver at Abingdon, they have the choice of three markets there, have they not?—Yes, they have.

936. Now, you have told us about the traffic on that part of the river, how do you propose to get the river in such a state as to make it navigable by boats?—Principally by dredging and repairing the present pound locks, and perhaps constructing others.

937. Do you mean all the way from Oxford?—From Oxford to Lechlade.

938. Yes?—Yes.

939. You would repair them all?—Yes; there are but four in the whole distance.

940. What would you do with the weirs?—Some of those perhaps may be removed, but it is a question to which I cannot speak with any certainty in the absence of any plan, or a survey of any district.

941. Would you have to deepen the river the whole of the way?—Nearly the whole of the way; as you may know, there is a very deep, fine reach just above Skinner's Weir to Bablock Hithe.

942. There are a great number of small aits, are there not?—Yes; there are one or two fordways which do not admit of navigation.

943. At Bablock Hithe there are shoals?—Yes; in addition to that there are some fordways over which the cattle in summer pass without interruption.

944. In fact, you would have to lay out a large sum of money to make it navigable from above Oxford?—Yes.

945. It would cost a very large sum, would it not, to put it all in thorough repair?—Not very large.

946. Is it included in the 30,000 *l.* which you spoke of yesterday?—Yes.

947. Is dredging the whole way along from Oxford to Lechlade, 34 miles, included in the 30,000 *l.*?—No, dredging would not be required along the whole 34 miles.

948. Where is it required?—I certainly did not calculate on doing a very large amount of dredging in that district.

949. You calculated, in truth, upon leaving the navigation exactly as it is now, did you not? No, certainly not.

950. As regards the reaches, you were going to repair to some extent the two or three locks that the landowners had, but to all the rest you were going to do nothing?—Except to make some of the more difficult places passable.

951. The very difficult ones?—Yes.

952. You would have done a little to them, I suppose?—Yes, very little in the district, perhaps between New Bridge and Tadpole.

953. And very little between New Bridge and Pinkhill?—There is very little required between New Bridge and Pinkhill.

954. Are you not aware that in the summer months it is almost impossible to get a boat up with more than seven tons?—That depends on the water. The water has been run, as it frequently is in that district, for fishing purposes.

955. Did you ever know the water run for fishing purposes there?—Constantly.

956. Which weir?—At the whole of the weirs.

957. Have you ever yourself known it?—I have never been present at any weir in this Upper District where that is the case, but I have been present at a weir on the lower part where I have seen the bucks put in at night, and at five o'clock in the morning I have seen them taken out.

958. I am speaking to you about Oxford; you know the fishery at Rudge's weir?—Yes.

959. Did you ever know of water drawn down for the purpose of catching fish at those different weirs?—Yes; I have myself; on one occasion I saw the bucks put down at Duxford Weir and taken out the next morning.

960. Is not the quantity of water that comes down during the summer months of so enormous a character that if it is penned up at one of the upper weirs it is impossible for a boat to get from Pinkhill to New Bridge with a full tide?—Yes; it is impossible to get along unless a flash is sent down.

961. We were told before the Commissioners that the system of flashing has not prevailed above Pinkhill?—I do not know who made that statement.

962. Do you recollect Alderman Ward being examined?—I believe he was examined.

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963. Turn to Questions 1939 and 1940; I will read it to you: "Skinner's is a weir of some importance, it being now the point from which the flashes are brought down for the navigation below Oxford; flashes are now practically abandoned above this point; I believe for the last ten or twelve years on not more than on one or two occasions have flashes been brought down from Ridge's, which is the weir above Skinner's Weir?"—Yes; I think you will find in another part of my evidence I stated that flashes were not brought down systematically and regularly from Lechlade, in accordance with the bye-laws of the Commissioners.

964. Perhaps you will look to the next answer, and see if that is the answer to which you refer?—Yes; that is the answer.

965. Practically speaking, flashes stop at what we call Skinner's Weir?—That requires a little explanation; above Skinner's Weir, as I stated before, there is a very large, fine, deep reach of water, and the boatmen who come down the Oxford Canal find that that is the most convenient weir for them to go to, between the flashes; consequently they very seldom go above Skinner's Weir; between Skinner's and Ridge's there are something like five miles, and there is generally plenty of water there.

966. Is it not the fact that, irrespective of these flashes, that for the four summer months it is impossible to take a loaded boat up from Ensham to Newbridge?—It is not only impossible to take a boat up there, but it is impossible to bring a boat below Oxford in many places without a flash.

967. Flashes do an immense quantity of damage to the riparian owners, do they not?—Mr. Ward made a statement, but I think you will find upon inquiry that that statement applies to something like 20 or 30 years ago, and to rather what was then the practice than at the present time; I am not aware that the flashes in the river do any damage.

968. Have they not been frequently complained of by landowners?—Years ago, in the old times, before railway competition, when the bargemen were a boisterous and a rude lot of men, they did pretty much as they liked with the tackle of the river; then, I believe, the flashes were a very great inconvenience; but that is not the case now.

969. Mr. *Peel.*] Why should a flash be injurious 20 years ago and not now?—Because, as I have stated, the bargemen then took matters very much more into their own hands than they do now.

970. Dr. *Addams.*] If a flash creates a level of the water, what does it matter whether the bargemen draw it rudely, or with a very soft hand?—I am not speaking of the mere manipulation of the bargemen, I am speaking as to the liberties which they took with the tackle generally.

971. Do you believe that the bargemen on the Thames have become more civilized?—Yes, and I think they are very much more lazy; they are not so anxious to get along with their work as they were.

972. I was asking you about the expenditure on this part of the river; do you think there is any reasonable probability that there will be a sufficient traffic on the part above Oxford to pay for the expenditure that must necessarily be made for working the barges?—I think if you take separate districts, or small portions of the river in other parts, you will find that the tolls arising from the traffic in those several parts, would not be sufficient to cover the expenses.

973. That you are quite certain of with reference to the part above Oxford?—That is the case above Oxford, and it is also the case close to Reading, at present.

974. You propose, do you not, to work by steam?—Yes.

975. If you were to have steam-tug boats above Oxford, would it be safe to work with a less permanent depth than six feet?—I would rather leave that question to be answered by Mr. Woodhouse, who has had much more experience than I have had.

976. You are the surveyor of the district?—Yes; but Mr. Woodhouse has had much more experience of the working of screw boats than I have had; my own opinion is, that a less depth than that would be sufficient.

977. I suppose I may take it for granted that you agree with the Report of the Commissioners in page 23, where they say, "The interest of owners of land on each margin of the reach above the weir is, that the water should be kept uniformly at a moderate level, neither so high as to waterlog the land, nor so low

low as to deprive it of moisture; the interest of the navigation is, that the water at the weir may be penned high enough to make the reach above navigable throughout, whether or not that height be suitable to the land;" does that accurately describe, according to your view, the state of affairs between the landowners and the navigation owners?—Perhaps it does accurately describe the present condition of the river.

978. Do you think, looking to the very small amount of traffic that there is above Oxford, that it is fair towards the owner of the lands that he should be subjected to the orders of Commissioners whose duty it is to keep up the navigation, who live at such a distance away from him as that; is that the sort of way in which you would deal with this question?—I think if I were a landowner resident in that district, I should certainly like to have some control.

979. You are here to support the Bill, you know; do you think, that looking to the necessities of the landowners of the upper districts, with regard to drainage schemes, that it is proper to submit all their rights to the management of a Board sitting in London for the purpose of keeping up the navigation of the river?—Before I answer that question, I wish to state to the Committee that I think the learned Counsel is putting me, to some extent, in a false position, when he says, I am here to support the Bill; I am here to give such evidence as from my knowledge I consider this Committee ought to have; I am here willing to make statements, but I certainly am not here prepared to say that I can support this Bill as it stands in all its details; with reference to the question which the learned gentleman has just put, Isay that the landowners are entitled, in my opinion, to as much consideration as the various other interests in London who are seeking to be represented on that Board.

980. Where there is a large quantity of traffic to come upon the navigation you would consider it fair that the riparian owners should be bound to allow the river to be used for that purpose?—Yes.

981. But where there is a very small quantity of navigation, and that of a very intermittent kind, would you compel the landowners to forego the advantages of drainage, in order to keep up this small quantity of traffic on the river?—No; I think I have stated, over and over again, that in my opinion the landowners' interest ought to be considered equally with the navigation interest; and I have stated before that in any well-considered schemes the two interests would not be antagonistic.

982. Would an arrangement of this sort suit your purpose; supposing that the drainage districts were made above Oxford, as far as Lechlade, and commissioners were appointed for those whose duty it would be to keep the present bed of the river cleansed, so that it could be used for navigation if required, but with a power to make the necessary embankments and cuts, for the purpose of drainage, would that be a feasible scheme?—That is just my view; of course when I say that, I say it without assenting to your proposal that a drainage commission is the proper commission to carry out such a work.

Cross-examined by Mr. *Sargood.*

983. Can you tell me at the present moment what amount you think is required to be laid out in order to keep the upper navigation in a proper state. I am assuming that the figures you gave twelve or eighteen months ago are probably varied now by your present experience?—Yes.

984. What would be required to be laid out, in the whole, in order to put the upper navigation in a proper state of repair?—From 30,000 *l.* to 50,000 *l.*; but, as I stated yesterday, I think that refers to the works which I took into consideration last year, and not to the works which are included in the provisions of this Bill.

985. What addition do you think the works mentioned in the Bill would make to your estimate?—I think you will find that I stated yesterday I was not prepared to give any opinion on that at all.

986. I thought that perhaps between yesterday and to-day you might have considered it?—I have considered it, but it is a question upon which certainly I cannot express an opinion.

987. Are you able to tell us at this moment what the liabilities of the Commissioners may be, independently of their 88,000 *l.* mortgage debt?—Their pecuniary liabilities at the present time, I think, will be quite met by the income

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they are now receiving; it will perhaps be by their next meeting, which will take place at the end of this month.

988. As a matter of fact, at the same time, can you tell me in figures what the liability is?—Something under 500 *l.* in my department, but there are some other liabilities with reference to the towing path rents, and annual payments, which are not contained in that.

989. What do you suppose they would amount to?—I can hardly tell you; that is a matter which belongs rather to the general clerk than to myself.

990. Have you no notion whether it is 500 *l.* or 5,000 *l.*?—It is certainly not 5,000 *l.*, and it is certainly not 500 *l.*

991. You cannot tell me exactly about what it is?—I cannot tell you the precise amount.

992. Are there any existing contracts at this moment in an unfinished state of any description?—There are some legal contracts, to which I suppose you are not referring now.

993. What are you referring to?—I am referring simply to the question of works, which are matters under my superintendence.

994. What are the other contracts?—Some of the Commissioners, I believe, have personally entered into contracts with certain landowners, with reference to the management of some parts of the river.

995. But not involving any outlay of money?—Yes.

996. To what extent are there any contracts of that sort?—I am not aware whether it was mentioned yesterday, but certainly the Commissioners have entered into a bond with Lord Boston, with reference to the part of the river at Cookham, which contract I believe compels those Commissioners personally to keep open the channel for the purpose of navigation to Lord Boston's property; that involves some small liabilities.

997. What do you call small?—I think, perhaps, 20 *l.* a year.

998. Is there anything else of that character, that you are aware of?—Not that I know of, but the general clerk can give better information on that point than I can.

999. Now, with regard to the improvement of the navigation and its ultimate result, is it your opinion that the improvement of the navigation will lead materially to an increase of the traffic and the annual income to be derived from it?—Certainly.

1000. Notwithstanding the neighbouring competition with railways?—Yes, notwithstanding that.

1001. Do you think if a sum of money could be raised sufficient to put the navigation into proper repair, and if the idea of other parties contributing to it who derive benefit from it, were carried out by this Bill, that it might be made comparatively self-supporting, so as not to want much assistance from other sources?—That depends very much on the extent of the works which are taken by this Bill; I certainly cannot see the need of the liabilities that are incurred under section 42 of the Bill.

1002. I want to see where the termination point is?—I think you will find, if they are examined carefully by an engineer, that it will be some time before you can arrive at that conclusion.

1003. You do not think that the thing could be made self-supporting, at any rate for some years to come?—From the navigation.

1004. Yes?—Certainly not.

1005. The water companies were alluded to yesterday, and perhaps some other sources of revenue may be hinted at to-day from other quarters; but I believe your idea is, that the parties who derive any benefit from it should contribute to the annual income of the navigation?—Yes; and I said that I think you will find in every case where you compel parties to contribute, that they will ask with their contributions to have some share in the representation and management of the expenditure of the money.

1006. I want to know whether you think there are any means of raising such contributions equitably and fairly as would meet the exigencies of the annual outlay on the river?—That depends to some extent on the advantages which you give to the persons whom you propose to tax.

1007. I see, even in your mind, it is a very doubtful problem, and that you have not solved it yet?—I have not certainly.

1008. Now, with regard to the representation, let me understand what you mean

mean by representation?—I mean that, in my opinion, the share of representation which is given here for the upper districts is quite inadequate, and practically is no representation at all.

1009. But adequate, or inadequate, what do you mean by representation; what do you desire to accomplish?—I mean that if you propose to rate or to tax any of the interests of the upper districts, such a representation as you propose to give them here, of three persons elected in the manner that they are proposed to be elected, will not represent them at all; in my opinion, this old Commission as it stands in this Bill, will very soon die out; I do not think people will ever take the trouble to qualify as Commissioners after the passing of this Bill, and the consequence will be that the nomination of three additional Conservators will rest, I suppose, with the other 18; I say that the landowners and other persons, who may perhaps be taxed hereafter, would practically not be represented here; I am not alluding to the *ex officio* members.

1010. I suppose your idea of being represented is that their interests might be properly protected as against the aggression of other parties of an opposite interest?—Yes.

1011. But do you not think that the Conservancy Board, as at present constituted, is a Board very well formed to prevent any mischief of that kind, seeing how many disinterested persons there are constituting it?—Yes; but in addition to the number who may be considered disinterested parties, there are certain other members who are strongly interested in the maintenance of the lower part of the river.

1012. Do you not think, taking the Board as a whole, that it would be a very well constituted Board for taking charge of the whole river, both upper and lower?—With some additions, to fairly represent the upper interests.

1013. You think without that addition it is not a safe Board?—I do; I think on broad grounds that it gives to London too much importance.

1014. I suppose you will agree with your predecessor, that the number of 18 is quite sufficient for all practical business, setting aside the question of individual interest?—That is perhaps a matter on which different opinions may be very fairly entertained.

1015. It is a matter on which I ask your opinion for what it may be worth?—I am a member of the Oxford Board of Health, which consists of 45 persons; there is no difficulty in those 45 persons performing their work; a great deal of the work is performed by the sub-committees which are appointed, and at present matters work very well indeed; I see no difficulty in sub-committees being appointed.

1016. The business of the upper river has been practically done by 15 people?—Yes.

1017. You find they are generally enough to do all the work properly?—Yes.

1018. Therefore, although 45 in your local experience has not been a mischievous number, still 15 have been practically enough?—Yes.

1019. I suppose the river duties of the Upper and Lower Navigation would be very much of the same class?—Not at all, as I imagine.

1020. Then there is a distinction?—Probably.

1021. The duties of the two committees, the Upper and Lower, are not identical in point of practice?—Not at all, I should imagine; I have no personal acquaintance with the working of the Conservancy Board, but I imagine, from statements made in respect of it, that its duties are very different from those of the upper district.

Cross-examined by Mr. *Toulmin Smith.*

1022. There are a few matters of figures which I am desirous of making plain; you mentioned yesterday that the tolls of last year were nearly to the same amount as the tolls of the year before; is that so?—Yes.

1023. I think you also stated that you were unable from those tolls to pay the expenses of the workmen whom you then had in your employ?—I think you will find I said, at the present time the workmen have all been discharged.

1024. I think you stated, if I recollect right, you had 11 or 12 still at work?—I said those 11 or 12 were still at work now, in consequence of the Oxford

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Canal Company having contributed a small sum of money for a small work, to prevent accidents.

1025. What is the amount of the tolls received last year?—Just over 3,000 *l.*

1026. What are the expenses which have swallowed up that sum?—The expenses were of course included in that amount, and it is in consequence of their being kept within that amount that the river has got into its present deplorable condition.

1027. You are aware that by the Bill, as it now stands, you can only raise money on the credit of the tolls; section 54 states that "In order to defray the expenses of executing this Act, the Conservators may from time to time borrow at interest, on the security of the tolls leviable under this Act, or any part thereof, such sums of money as they think requisite for the execution of this Act (over and above any money which they are for the time being authorised to borrow, independently of the present enactment), not exceeding in the whole the sum of (blank) thousand pounds, and may mortgage the tolls leviable under this Act, or any part thereof, to secure the repayment of the money so borrowed, with interest accordingly"?—Yes.

1028. I understood your answer yesterday to be in effect that you conceive that under this Act the tolls would be so increased that you would be enabled to have a balance after raising money enough to do the work which you consider to be necessary?—I think I stated that in time that might happen.

1029. I think you stated that between Lechlade and Oxford you did not consider that the Thames navigation, even if put into good order, could compete with the railways and canals?—Hardly in that form.

1030. Perhaps not in those exact words, but that was the substance of it?—There is no competition there between railways and canals.

1031. I think you stated yesterday that from Lechlade to Oxford the Thames navigation did not compete successfully with coals borne by canal or by railway; perhaps you will allow me to ask you what the fact is; will the Thames navigation, if improved according to your plan between Lechlade and Oxford, be a paying scheme?—Not a paying scheme, certainly.

1032. You stated, with reference to the landowners and riparian proprietors, you considered that they are liable now to do the repairs of the banks, and not the Commissioners?—Yes.

1033. Do you consider that clause 40 of the present Bill, which proposes to repeal, or, rather, not to give to the Upper Commissioners, the 58th section of the first Conservancy Act, is a desirable enactment?—I am not sufficiently acquainted with the Conservancy Act to express an opinion upon that.

1034. You are not aware that section 54 of the Conservancy Act expressly enables them to grant licences to owners to embank?—No, I am not aware of that.

1035. You gave us yesterday certain estimates, and you stated that those estimates included only certain particulars; you gave an estimate of 2,000 *l.*, if I rightly understood your answer, to do that work which will make the navigation safe during the present summer?—Yes, simply safe.

1036. You are aware that in the Report made by the Committee of the House of Commons last year the following passage occurs: "Engineers of great eminence were called by your Committee, and they all agreed that a sum exceeding 20,000 *l.* should at once be expended upon the works, not only to prevent a destruction of property, but possibly of life;" I wish to bring in harmony these figures, which apparently are in conflict; do you understand that to include the same matters that you have mentioned as being able to be done for 2,000 *l.*?—My statement as to the 2,000 *l.* must be taken in this way, that at the present moment there are certain works upon the river which are in a highly dangerous state; accidents may happen at any moment; and, with a view to avert those accidents, I consider that the sum of 2,000 *l.* ought to be expended.

1037. These eminent engineers say, "That a sum exceeding 20,000 *l.* should at once be expended upon the works, not only to prevent a destruction of property, but possibly of life;" how much further do you go than a destruction of property, or possibly of life?—Not any further; when I stated 2,000 *l.*, I stated that as a mere temporary matter, while this Bill is passing through Parliament.

1038. Then

1038. Then you gave a figure of 30,000 *l.*, which you thought would be necessary to put the navigation in complete repair?—£. 32,000, I said before the Committee last year, and I say now from 30,000 *l.* to 50,000 *l.*

1039. That, I understand you to mean, to put the navigation in complete repair?—Yes.

1040. Mr. Leach last year gave evidence before the Commission that he made a rough estimate for the Board of Trade sometime ago, and his lowest estimate is 112,000 *l.*; what does he include in that sum?—I am not aware.

1041. You told us yesterday that your estimate of from 30,000 *l.* to 50,000 *l.* did not include all that was intended to be included by the present Bill; will you state what else there is in the present Bill beyond that?—The liabilities in connexion with works mentioned in section 42.

1042. Does section 42 include the whole of those additional works?—Yes.

1043. Is anything included in section 42 which will tend to purify the stream of the sewage pollution?—Nothing whatever in the shape of works.

1044. It is confined simply to the question of your own estimate last year, and whatever may be the estimate under this Bill, is confined entirely to works attaching to the navigation?—Yes.

1045. And nothing whatever to purify the river from sewage?—Not at all.

1046. There are no powers given by the Bill which enable yourselves to do any act to purify the river?—No powers are given in the Bill to construct works; the powers are simply prohibitory against others.

1047. And nothing which enables or empowers them to spend money in order to purify the water?—Nothing whatever, as I understand, beyond the mere fact of scavengering the surface.

Cross-examined by Mr. *Lumley Smith.*

1048. You told us that the rural population along the Thames depends in a great measure upon the business condition of the mills; can you tell me how many mills there are from Staines to Cricklade?—Twenty-nine.

1049. Not more than 29?—No.

1050. I mean mills of all kinds?—Not more than 29, and those include the waterworks at Romney.

1051. Are they paper mills and flour mills?—Yes.

1052. Can you tell me how many paper mills there are out of that number?—There are several mills on the tributaries which are not included in the 29.

1053. Would that be within the limit of three miles?—Yes.

1054. Can you tell me how many more there would be besides the 29 on those tributaries?—I can hardly tell you, because in Wycombe there are over 30 mills within seven miles of the Thames.

1055. I may take it that there are a very considerable number of mills which would be affected by this Bill, if it is passed in its present form?—You may take it as a general statement that within three miles of the Thames there are more mills than there are actually upon the Thames.

1056. They are almost exclusively paper mills and flour mills?—Yes.

1057. Can you give me any estimate of the value of those mills taken in the aggregate; I see in your evidence given before the Committee you say that one mill is worth about 20,000 *l.*, to your knowledge?—Yes.

1058. Have you formed any estimate of the aggregate value of the mills?—No, I have not.

1059. Sir *G. Bowyer.*] Which is the one that is worth 20,000 *l.*?—I think you will find that I did not feel at liberty to mention the name of the mill, and I feel that difficulty now.

1060. Captain *Vivian.*] Are all the mills within three miles of the Thames dependent upon the river for their water supply?—No; but they are dependent upon the river for getting rid of their tail water and their refuse at present.

1061. Mr. *Lumley Smith.*] I may take it that anything that materially interferes with the successful process of trade in those mills, would interfere considerably with the rural population along the Thames?—Certainly it would.

1062. You have made an estimate of the sum of money that may be required, but you have not included in that sum I presume any compensation which would have to be made to any millowner whose trade was destroyed?—None whatever.

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1063. Do you not consider it reasonable that if the millowners have their power of carrying on their business destroyed by the operation of this Bill, that they should receive some compensation?—Certainly.

1064. It is usual, is it not, to insert such a clause in all Bills of this kind?—That is a matter on which I am not competent to give an opinion.

1065. Now, with respect to the scheme of representation, I see that before the River Commissioners you suggested a body of 21 members?—Yes.

1066. Do you consider that an addition of three members to the Conservancy Board would not be sufficient to represent the local interests of the Upper Thames?—I do consider that they would not be sufficient.

1067. Do you not consider that the millowners have a great interest in the Upper Thames, and that they ought to be represented too?—As I have stated over and over again, my own humble opinion is that nothing would be satisfactory, unless some plan was carried out which should be advantageous to the whole of the interests concerned.

1068. Among those you include the millers?—Yes.

1069. You were asked by a Member of the Committee whether fish were not sometimes destroyed by the refuse from the paper mills; you are aware that considerable evidence was taken by the Rivers Commission as to the effect of the refuse from the paper mills upon fish?—Yes.

1070. I believe you heard some of that evidence, did you not?—A very small portion of it.

1071. You have no practical knowledge of the way in which paper-making is carried on?—No, I have not.

1072. Any opinion which you have given you have derived from the evidence given before the Commissioners?—I speak from what I have seen myself.

1073. Will you give us some instances in which the refuse from the paper mills has destroyed fish?—I have seen fish lying dead from the effects of the refuse at Sandford Mill.

1074. Have you any means of judging by what process in paper-making that destruction of fish was caused?—No, I have not.

Cross-examined by Mr. *Gregory.*

1075. We had it in evidence yesterday that you do not consider it inconsistent with a proper system of the Conservancy of the Thames that the interests of the millers should be represented?—Will you allow me to correct your statement. I think, if I understand rightly, that the whole of the millers whom you represent are below Reading.

1076. Some are above, between Oxford and Reading, and some are below?—Mr. Witherington and Mr. Saker are both below Reading.

1077. I will hand you a copy of my petition, and then you will see where their mills are. I assume, from your examination-in-chief yesterday, that you consider the interests of the millers should be represented, taking them generally?—Yes.

1078. And that it would not be inconsistent with a proper scheme of Conservancy to represent those interests?—Not at all inconsistent.

1079. In fact, the millers might very well be considered as one item of representation?—Yes.

1080. You are aware that the Bill, as it stands, makes no provision for representing the interests of the millers?—I believe it does not.

1081. Probably some scheme has occurred to you by which those millers' interests may be represented?—Yes, but I have not sufficiently matured it, as I have stated before, in consequence of no definite survey of the river being in existence.

1082. You consider that before such a scheme could be matured, a definite survey would be necessary?—Yes, most decidedly I do.

1083. I may ask you generally, whether such a system would involve the maintenance of that head of water for the purposes of the millers and of the navigation?—Yes.

1084. And that the weirs and embankments should be maintained?—The existing weirs and embankments?

1085. Yes?—Subject of course, to such modifications as an amended plan would require.

1086. What

1086. What manner of plan are you speaking of; a general scheme with reference to the navigation?—A general scheme for combining the interests of the navigation, the mill owners, and the land drainage interests.

1087. But that general scheme you have not matured, as I understand?—There is no such scheme in existence.

1088. Then before this could be carried out, you consider a scheme should be matured involving the interests of the mill owners, involving the drainage of the land, and involving a general plan with reference to the navigation?—Yes, I certainly consider that, to take the greatest advantage of the Thames, such a scheme ought to be considered.

1089. Sir *G. Bowyer.*] I apprehend what the millers want to have is sufficient water at all times to work their mills, and that is all they want?—Quite so.

1090. Do you think that a scheme is necessary for that purpose?—The same scheme which would enable the millers to work their mills, would enable boats at all times to pass.

1091. That scheme would consist in keeping the water level at the proper point?—Re-adjusting the level, and adding in many places a considerable quantity of dredging.

1092. I suppose that would be rather a benefit than not to the navigation?—It would be a benefit to every one.

1093. And therefore what is advantageous to the mill owners would also be advantageous to the navigation?—Yes.

1094. The interests of the mill owners is always to have a proper supply of water?—Yes.

1095. And the interests of the navigation is always to have a proper supply of water also?—Yes.

1096. Then the two interests appear to me to be identical?—Quite so; that is what I have stated; in addition, to meet the complaints made by the gentlemen whom Dr. Adams represents, a scheme should be considered with reference to the drainage of the lands.

1097. Mr. *Gregory.*] With respect to this general scheme, as I understand you, you think there should be a survey of the river, and that there should be a new scheme both for the navigation and for the mills?—Yes.

1098. Therefore you consider that the Bill now before the Committee is presented to them in somewhat of a crude form, there having been no such survey and no such scheme?—I can come to no other conclusion.

1099. You look upon that as a necessary preliminary to legislation upon the subject?—I say I can come to no other conclusion, from not being aware that any such plan has been framed.

1100. As far as you know, no such plan has been made, or completed?—No.

1101. Are you aware that the mills are liable to obstructions from pieces of timber and other things being brought down upon them by the stream or floods?—Yes, and also weeds.

1102. And that it is very desirable for the millers to have the power of removing such obstructions?—Yes.

1103. Does not that occur upon the weirs too, by which the water is maintained?—Yes.

Re-examined by Mr. *Phinn.*

1104. Now about these millers' rights; in the first place, I believe that the millers can annoy one another pretty much as things now exist?—Yes, they do.

1105. That is, one gentleman draws down and the other pens up water irrespective of the rights of the man above him?—Yes.

1106. Do you find that in practice the exercise of the rights of the Commissioners are complained of by the millers?—No; on the contrary, the manner in which the millers exercise their rights have been complained of by the Commissioners and by the traders.

1107. The truth is, the millers have not been so sharply looked after under the old Commission as they would be under the new one?—Yes; that probably is the case.

1108. There are two distinct things with regard to these millers, namely, their rights to the water, and their rights to foul the stream, are there not?—I am not aware that they can be said to have any right to foul the stream.

1109. With regard to their rights to the water, do you think that might be

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left to the Commissioners to adjust?—Subject, of course, to some consideration, as I before stated, in favour of the millers.

1110. You think that the interests of the navigation which the Commissioners would have to protect can be reconciled with the interests of the millers?—Yes.

1111. They claim a right actually, do they not, to foul the stream by pouring their refuse in?—Yes.

1112. That they claim as a right, as I understand; have you found the fouling of the stream increase of late years?—I believe that the fouling of the Wytham, which is discharged into the Thames, has considerably increased; but from my comparatively short acquaintance with the Thames I am not able to answer your question.

1113. It might be a matter to be determined whether they have or not any right to foul the stream, as contradistinguished from their rights to use the water of the stream?—Yes.

1114. The Commissioners have never interfered with the fouling hitherto?—The present Commissioners have no power whatever to interfere with the fouling.

1115. Now, let us pass from that and go to another subject. My learned friend, Dr. Adams, who appears here as counsel for St. John's College, appeared, I think, before the Commissioners and before the Committee as a witness, did he not?—Before the Select Committee last year and also before the Rivers Commissioners.

1116. As far as I can compress his contention into a small compass, it is this: he is anxious that the river above Oxford shall no longer be dedicated to the purposes of the navigation; are you of that opinion?—I have stated, I believe, in evidence here that I do not agree with that opinion.

1117. I am wrong in saying that he says above Oxford; he says 10 miles above Oxford, and beyond 10 miles above Oxford, in his evidence before the Commission?—From Oxford to Newbridge, I think you will find.

1118. That is, 10 miles as the crow flies, and not by the course of the river?—It is hardly 10 miles as the crow flies; it must be over 10 miles by the river.

1119. Are you in favour of stopping the navigation from above Newbridge to Lechlade?—No; I have stated that I would maintain the navigation, and, in addition to maintaining the navigation, I am of opinion that whoever has the management of the lower part of the river should have the management of the sewage and of the weirs in these upper districts.

1120. He has referred to a committee presided over by Mr. Philip Pusey in 1853, and he has been good enough to hand me the Report; I see the object of the gentleman on that committee was to effect the drainage; I see it is suggested that it was "worthy of consideration whether the expenses of a fresh application to Parliament might not be avoided by a voluntary assessment to the above-mentioned trifling amount on the part of the landowners interested"; has any such proposal ever been made in your days by the landowners to assess themselves, so as to help the drainage?—Yes; I believe the matter to which Dr. Adams referred, namely, the embankment in Stanford Harcourt, is similar to that case to which you alluded.

1121. I find a Report appended to the Report of that committee, signed by Mr. Barker, who was the then Chairman of the Navigation Commissioners, in which there is the following passage:—"The committee in concluding their survey at St. John's Pound Lock, have the satisfaction to observe that none of the evils complained of by the landowners and occupiers are at all attributable to the works (which are very few) connected with the navigation, but they find all the evils of high floods much increased by the negligence and inattention of the landowners and occupiers themselves, who have, in no observable instance, done anything towards keeping the natural channels for the water open, but have, on the contrary, encouraged their contraction, by the growing of willow boughs, and planting every sand-bank and deposit in the river for growing rods, and for the purposes of fishing"; does that tally with your experience?—I believe that is the case, but since the publication of the report the landowners in certain districts have made some improvements.

1122. But is that improvement general?—Yes, I think it is now pretty general.

1123. The

1123. The landowners are very largely represented on the Commission as it at present exists?—Yes, I presume they are.

1124. They consist of 600 or 700, and are all gentlemen connected with counties, so that I suppose a great many of them are landowners?—I think the principal part of the Commissioners now are persons who are residing in towns, a very large majority of whom are near to the places where they can qualify.

1125. Then the landowners have not qualified?—No.

1126. Has the matter ever been brought before the Commissioners at large, and discussed as to the propriety of the landowners getting power to make these drainage districts?—Not since my connection with them.

1127. Now, with regard to the constitution of the Commission itself, do you think there ought to be a more direct representation of the upper districts?—Yes.

1128. You are aware that, putting aside the members for the City of London, a great many gentlemen appear on the Conservancy Board who are perfectly independent, such as the representatives of the Board of Trade and the Admiralty; you have no doubt that they discharge their duties fairly and properly to all parties?—I am not expressing any doubts as to the integrity of any of the gentlemen, but I am simply expressing an opinion on a question of principle; if certain interests in London have considered that they have a right to be represented at that Board, I think on the same ground the interests of the upper districts ought to be represented.

1129. Is not the whole work of these Commissioners to see that the officers do their duty, and are active, energetic, zealous officers; that is the main object, is it not?—I suppose in most Boards very much depends upon the ability and energy of their officers.

1130. Almost everything, does it not?—That depends very much on whether the Boards are willing to allow their officers really to take the initiative.

1131. That is whether they limit their zeal too much?—Yes.

1132. Is not the main difficulty here to put the river in order at once?—Yes, that is the first difficulty.

1133. When it is once done, the maintenance, with a little care and supervision, is a comparatively easy task, is it not?—Yes.

1134. Do you imagine that there is anything in the upper part of the river like the complicated interests that there are in the Pool, or in this part of London?—I cannot make any comparison between the two, because I am not acquainted with the Pool; I certainly know that the interest of the upper districts are greatly complicated and very troublesome; they are comparatively small and trumpery interests, but they are very troublesome.

1135. You know that here every inch of frontage is valued at hundreds of pounds for wharfage, and so on?—Yes.

1136. There is nothing like that in the upper districts?—No; but still comparatively the regulation of the water with respect to the mills and the land is of equal consequence.

1137. It is proposed to give the Commissioners the power of making bye-laws; do you not think that the difficulty about representation might be avoided, if you give to those, who were to be affected by the bye-laws, an opportunity of being heard before the bye-laws are finally sanctioned?—Yes, that might meet the case to a very great extent.

1138. I will refer you to the 31st section of the 27th and 28th Victoria, cap. 113, which is the Act of 1864. (*The learned Counsel read the Section.*) Would not that meet the complicated interests of the river very much?—No doubt it would.

Examined by the *Committee.*

1139. Sir *G. Bowyer.*] As far as these complicated interests are concerned, are you of opinion that these interests are really and substantially antagonistic to each other, or are you not rather of opinion that all the interests might be equally represented with advantage to all?—I am decidedly of opinion that all the interests may be advantageously combined.

1140. That the true advantage of one interest would not be substantially adverse to the real advantage of another interest?—Quite so.

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1141. But the object of the new body to be constituted by that Bill, would be to keep the scales even between the different interest?—Yes; that of course is a legitimate object.

1142. Mr. *Acland.*] Assuming, which we may assume, that the Commissioners will do their best to discharge their duty, are you prepared to say that the interests of the millowners and the navigation are identical with those of the owners of land?—Yes, I am quite prepared to say that.

1143. You mean that whatever tends to deepen the water of the river for navigation purposes is also advantageous to the landowners?—I say that, of course, subject to a well-considered plan.

1144. I do not ask you whether it is possible for gentlemen to do justice, and do their best to regulate conflicting interests, but I ask you whether you intend to convey to the Committee that the interests of the millowners and the navigation are identical with the interests of the landowners?—They may be made identical.

1145. Will you explain in what way they may be made identical or harmonious?—In any plan for the future management of the Thames, I consider the first point should be to have a very careful survey made of the whole of the districts, and upon that survey, to some extent, a new system of navigation should be laid down, which should give all possible advantages to the millers, and all possible advantages to the landowners in the way of drainage, and should supply the water to cattle, and I consider that that may be done without injury to anyone interested.

1146. Mr. *Peel.*] It will be the business of the body who have the government of the river to propose that scheme?—It appears to me that sufficient power should be given to the Board to undertake those duties.

1147. Mr. *Acland.*] As I understand you, you do not go further than this, that if there are difficulties in combining the interests of those who wish either to irrigate their land or to drain their land, with the interests of those who wish to keep the river always free, that it is possible by good management to adjust those conflicting claims?—Yes.

1148. You really do not go beyond that?—No, I do not.

1149. Sir *G. Bowyer.*] I understood you to say, not that all these interests are identical, but that they may be made consistent one with the other?—That they may work harmoniously together.

1150. The main point being to keep the flow of the water uniform, as far as possible, neither too high nor too low?—Yes.

1151. If that is done, I suppose the interests of everybody would be consulted?—Yes.

1152. Mr. *Acland.*] Did I understand you to say that the owners of the land had an interest in keeping the river at a proper level, with a view to get good outfalls for the drainage?—Of course.

1153. Do you consider that the machinery of the present Bill is adequate to manage all these complicated interests of the millers, the navigation, and the landowners, without modification?—No, I do not.

1154. Do you think that the interests of the towns are sufficiently represented with reference to their sewage?—I do not.

1155. Will you point out what modifications you think desirable?—With reference especially to a question which was put by yourself, with regard to Local Boards of Health, it appears to me that it would very much simplify this Bill if the whole of the Commissioners (and I am saying this as their officer, and I hope they will pardon me for saying so) were swept away entirely; if, instead of keeping this very cumbrous and curious body for the purpose of electing three representatives, power was given to every town which adopts Local Boards of Health to send one representative; and if, in addition to that, the landowners were allowed to send one representative, I think what I have been alluding to as direct representation would be very fairly met, and with far less trouble than all this troublesome machinery.

1156. Do you mean that the whole of the landowners should send only one representative?—I am not saying any particular number, one or more.

1157. You are an officer, as I understand, of the Commission whose jurisdiction extends down to Staines?—Yes.

1158. Are you of opinion that it is on the whole possible to manage all the interests of the Thames by one Board, or do you think that the interests which

have

have been suggested in London, are so entirely different to those of the upper Thames, that it would be desirable to keep them separate?—I certainly entertained an opinion when this matter was first mooted, that, in consequence of the interests being so very different, it would be better to keep the river under two separate Boards of management, but several very important points have been introduced into the consideration of this question, since I entertained that opinion; and I now think that one Board may perhaps manage the river better than two; I mean that seeing that the local interests of London are represented, if the local interests of the upper district are represented as well, then I think that the members of the Conservancy Board may be looked upon as independent members, and might very well hold the balance between the two interests, that is the interests of the upper districts and the interests of the lower districts.

1159. If the larger scheme at which you have hinted as the result of the survey is carried out, will there not be a considerable demand for expenses, with regard to the upper part of the Thames?—Probably there would.

1160. Do you think that all parties interested would be satisfied to nave money laid out in improvements on the upper part of the Thames, in which the lower part of the Thames have no direct interest, beyond that of having plenty of water, or clean water, if the revenue is derived from the lower part of the Thames?—I consider that, if there is no corresponding increase in the revenue from the improvement of the upper districts, that the people residing in the lower districts may reasonably complain.

1161. Then the interests of the lower part of the Thames, as I understand, is chiefly to have plenty of water, and clean water?—And, in addition to that, it is to the interest of the shipowners and persons who navigate the lower districts, coal merchants. and so on, to send their trade higher up the river to the upper districts; it is to the interests, for instance, of builders residing in Reading, Windsor, and Oxford to have some of these communications so that they may be able to get their timber direct from the ships.

1162. That is included, is it not, in a sufficient supply of water; that would also pay its way?—I understood you to say that the only advantage would be that the lower districts would get a better supply of water; I say, in addition to that, there would be the advantage of improved navigation.

1163. You are of opinion that it is possible to raise a revenue in the upper part of the Thames in consequence of the advantage which the upper part of the river will gain from improving it?—Yes; whatever tends to improve the upper part of the river will tend to increase the revenue of that part from the navigation.

1164. Is it not extremely doubtful whether the navigation is maintainable above Oxford?—When I say the upper part of the river I am speaking of above Staines.

1165. My question was directed to the possible improvement in a sanitary point of view, and also improving the landed property throughout the whole of the upper part of the basin, if that is imported, as has been suggested, into this Bill, will it not be necessary to look to that part of the basin of the Thames for revenue?—Certainly.

1166. Can you suggest where that revenue is to come from; are you prepared to say whether any rate can be levied on lands, or towns, or any of the parties interested?—I have given some consideration to the question of rating land, but, as I said before the River Commissioners, it is a very doubtful matter to adjust, and I believe that any attempt to impose a rate would be fatal to the Bill.

1167. To this Bill?—To this Bill or any Bill of the same kind which gave powers for rating lands.

1168. Are you of opinion that the interest of the landowners in the improvement of the river is so small that it is not worth paying for?—I expect that that is their view; but I imagine, from the line which Dr. Adams has taken to-day, that their interest must be perhaps greater than has been presented.

1169. What is your own opinion upon that subject; is it your opinion that their interest is small, or that it is worth paying for?—My own opinion is that if the river is put into a proper condition, that it is for their advantage, and that they ought to pay for it.

1170. Colonel *Napier Sturt.*] I believe you stated that, in your opinion, the interests of the navigation, and the owners of mills or water power on the river, ought to coincide and go together?—Yes.

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1171. Do you not think it therefore essential that those owners of mills should be represented on the Board, because, promoting the well-being of the water power, they would promote that of the navigation?—Yes, I think that is a very fair request on their part.

1172. Sir *G. Bowyer.*] You have not told us who is to pay for the survey; have you any idea what the expense of the survey would be?—Whoever is to manage the work must pay for the survey.

1173. Have you any idea what the cost of a survey would be?—Probably 1,000 *l.*

1174. And that would be paid for, I suppose, out of the general funds of the new Board of Conservancy?—It would be paid for out of the funds of whatever board took the management of the river; but, apart from that, I intended to go a little further, and perhaps I ought to say that until such a survey is made that no very accurate statement of the cost of the works can be made.

1175. Sir *M. Beach.*] I think you have stated that the river has been so silted up just between St. John's Bridge and Buscott, that the depth of it is now only about two feet?—Yes.

1176. Do you consider that that depth of water will be enough for any traffic to go over it?—Certainly not.

1177. You spoke of 30,000 *l.* as your estimate of the cost of improving the river; did you include sufficient dredging to allow the traffic to pass over?—Yes.

1178. Sufficient for the steam-barge traffic to pass over?—I hardly contemplated any steam-barge traffic in the district above Oxford, at least the district between Newbridge and Lechlade.

1179. Allow me to call your attention to your answer to Question 2030, page 65, before the River Commissioners; I rather gather from that answer that you would propose to keep up the locks and weirs between Lechlade and Oxford, rather to form reservoirs for the aid of the navigation below, with the view of any traffic between those two places?—Yes; I consider that that is of the greatest importance.

1180. Then would you propose to keep up all locks and weirs in that district, or how far up?—I think I have stated somewhere that I would only maintain sufficient weirs to store the water, and I would remove, perhaps, some of them which might be removed without damaging the navigation, supposing that any navigation should ever be carried on there.

1181. I am looking at this rather the other way; you would suppose that no navigation would be carried on there?—Very little navigation.

1182. Then would you remove the weirs at the upper portion of the river, and the upper locks?—That, again, is a question which I cannot answer very satisfactorily until, as I have said, some survey is made.

1183. Then, supposing something of that kind is done with regard to the upper portion of the river, I imagine that the duties of the Board of Conservancy with regard to that portion of the river would simply consist in looking after the locks and weirs which were kept up for the purpose of maintaining the lower navigation?—In addition to that, I consider that they ought to pay particular attention to the manner in which weeds are cut and sent adrift in that district.

1184. You think that essential to the proper maintenance of these reservoirs?—Yes.

1185. Are there any locks or weirs or eel buck fisheries between Lechlade and Cricklade?—I do not know at all.

1186. Do you know that portion of the river?—I do not.

1187. I believe you are a member of the Board of Health of Oxford?—Yes.

1188. Do you remember the floods last winter?—Yes.

1189. Were they not rather more extensive just above Oxford than in any other part of the Thames valley?—No, I believe not; at Oxford, and down as far as Sandford, the floods were not excessively high, but at Reading, Henley, and Windsor they were higher than they had been for many years.

1190. About Port Meadow and Wolverton they were all over the extent of the valley?—Yes, that frequently happens; they were not higher last year than they had been on many previous occasions; in fact, they were not higher than they were in previous years.

1191. Then you do not consider that that part of the river is more liable to floods

floods than the other places you were speaking of?—Not at all; wherever a tributary joins the Thames the district all round that tributary is liable to be flooded in the winter time.

1192. Colonel *Napier Sturt.*] If the locks and weirs above Oxford were done away with altogether, and the navigation above Oxford abandoned, would not that lessen the probability of floods very much?—That is very doubtful; it would be a very dangerous experiment to allow the river to run uncontrolled along there.

1193. You see a great objection to doing away with the weirs above Oxford?—The course of the river would be entirely changed, and I think the probability is that the floods would be very much more extensive in many districts than they are now.

1194. If the navigation above Oxford were done away with, you would still keep up a number of locks and weirs?—Yes.

1195. But not so many as now?—That depends on what plan may be arranged.

1196. Captain *Vivian.*] In short, the river requires artificial control?—Yes.

1197. Lord *Eustace Cecil.*] Do you know anything at all about the old debt incurred by the Upper Commissioners?—Nothing more than the amount.

1198. I wish to call your attention to the evidence of Mr. Graham at Question 157, because there is some discrepancy in the figures; he states that the total amount that they were authorised to borrow was 100,000*l.*; then at Question 158, he states that they have borrowed 95,000*l.*; at Question 205, I see it is stated that answers were received from bondholders representing 103,000*l.*, agreeing to postpone their debt. "From persons holding 5,300*l.* worth of debt agreeing to take 5 per cent., and I had dissents to either course by letters from people holding 3,300*l.*; and I have ascertained from conversation with others holding 9,000*l.* that they dissented, making together 122,000*l.* of dissents;" now, I do not quite understand how it is that there should be persons representing 122,000*l.* worth of debt, when the amount borrowed is 95,000*l.*?—That evidently is a mistake; the amount in answer to Question 157, as far as my knowledge extends, is the correct one; the other must be an error.

Stephen William Leach, Esq., called in: and Examined by Mr. *Phinn.*

1199. You are a Civil Engineer, I think?—Yes.

1200. You are engineer to the Conservators of the River Thames?—Yes.

1201. You were engineer to the Corporation for a great many years before the Conservancy Board was established, I think?—I was.

1202. And on the creation of the Conservancy Board in 1852, you were appointed their engineer?—Yes, I was.

1203. I need not ask you whether, in your capacity as engineer to the Corporation and the Conservators, you have had a great deal of experience of the river?—Yes, I have.

1204. You were examined, I think, both before the Committee of last year and the River's Commission?—Yes.

1205. Your evidence before the Committee is at page 17, and before the Commission is at page 272?—Yes.

1206. You also made a Report to the Conservators, which was produced to the Committee, dated the 23rd of July 1864?—Yes.

1207. How was it you came to investigate the condition of the upper part of the river?—It was at the instance of Mr. Hutt, who was then Vice-President of the Board of Trade.

1208. I need not trouble you further about that Report than to ask you whether you still adhere to the statements made in that Report?—Decidedly.

1209. I think there is a misprint in your Report; you say, "The portion of the river beyond the jurisdiction of the Conservators of the River Thames from Cricklade, in the county of Wilts, to Staines, being about 152 miles in length;" is it quite as long as that from Cricklade to Staines?—I cannot be certain, but I think that is correct, seeing that I took some pains to ascertain it.

1210. That Report is printed in the Appendix to the Report of the Committee at page 73, so that it need not be reprinted in these Minutes; now, to bring you

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you to a point, I believe you made a rough estimate for the Board of Trade some time ago, as to what it would cost to put the upper part of the river into a complete state of repair?—I can scarcely call it a complete state of repair, because it would be impossible for me to make an estimate for that without a proper survey of the river; but I went over the river from Oxford to Staines, and formed the best opinion that I could of what it would cost to put it into working condition, not introducing such works as a navigation like that ought to have; not quite so substantial as they ought to be; in fact, my object was to get at the very lowest possible sum that I could to put the navigation into a workable state.

1211. What did you calculate the amount at?—It was about 110,000*l.*

1212. In answer to Question 8934, you say this: "I made a rough estimate for the Board of Trade, some time ago, and I put the lowest estimate as about 112,000*l.*"?—Yes; it would be impossible to put the whole navigation at once into a proper state, and therefore in many instances I contemplated only putting it into such a state that the locks and weirs could be maintained until a thorough reinstatement of the works was carried out.

1213. Do you concur with Mr. Castle in thinking that from 30,000 *l.* to 50,000 *l.* ought to be immediately expended for absolutely necessary works?—I am quite sure of that, at least.

1214. Without any preliminary survey?—Yes.

1215. And the longer you delay the matter, that sum will of course increase?—Yes, no doubt.

1216. In a geometrical proportion, I suppose?—I think it would necessarily.

1217. Do you think it desirable, independently of the works, which I will not go into in detail, that provision should be made for scavengering the river?—Yes.

1218. That is, removing the dead dogs, putrid carcases, and so on?—Yes, and much more than that: the boughs and grass, and a great variety of other things.

1219. And this American weed that we hear of in connection with these inquiries?—Yes.

1220. Have you turned your attention to any mode by means of which you are to get the money, because that is a very important part of this inquiry?—Yes, and a very difficult part of it; I think that it is of such vital importance to the water companies that the water should be preserved in the very best state, that it would be nothing but fair to expect a contribution from them towards the expense of the works, and towards the maintenance of them, and towards the expense of scavengering the river and keeping a supervision over it.

1221. I believe that provision is admitted in principle in your relations with them, now they pay you 1,400 *l.* a year?—Yes.

1222. Are you aware that the Trustees of the River Lee receive from the New River Company and the East London Waterworks sums of 1,500 *l.* and 2,000 *l.* respectively for water?—Yes; I think even more than that.

1223. I think they pay according to the gauge, do they not?—I am not quite acquainted with the arrangement.

1224. You think it is right in principle that the companies who take the water from the Thames, and who sell that water to the inhabitants of the metropolis, should be taxed for the necessary works above the sources of supply?—Yes, I do.

1225. Have you calculated the amount of water that is taken every day from the river?—In dry seasons it amounts to from 70 to 80 million of gallons in the 24 hours.

1226. That is by the five companies above Teddington Lock?—Yes.

1227. Of course they have an interest that it should not only be mechanically pure but chemically pure?—Quite so.

1228. The Legislature has attempted to secure the mechanical purity by a system of filtration, has it not?—Yes.

1229. That is enforced by the Acts of 1851 and 1852?—Yes.

1230. But what is desired is chemical purity as well?—Yes.

1231. I think no means have been taken to secure that?—No, I think, not the slightest; the provisions in the Conservancy Act prevent any new drainage from coming into the river; that is very sharply looked after in the Conservators' part of the river.

1232. That

1232. That of course only extends from Staines down to the source of supply?—Quite so.

1233. There is no provision in the Water Companies' Acts for using any process by which the chemical pollution may be separated from the water?—No.

1234. This Bill contemplates prevention rather than cure, that is to say, the prevention of any impurities being poured into the water?—Yes.

1235. Do you think it desirable that, if that could be secured for the river companies (I may use that term to avoid enumerating them), that they should pay something for it as a contribution?—Yes, for that is rather an expensive process.

1236. You think that the water ought to be chemically, as well as mechanically pure?—Yes.

1237. The public have a right to that?—Yes.

1238. If that can be secured, the water companies ought to pay something towards the expense of it, leaving the question open of what they may charge the public in their existing rates?—Yes.

1239. Do you know whether they charge the maximum of their rates to the public now?—No, I do not.

1240. Supposing 60,000,000 gallons a-day are taken by the five companies, have you made any calculation as to what will be a fair sum to charge per thousand, or per million gallons?—I put it at 10 *s.* per million gallons.

1241. That would be about 30 *l.* a-day?—Yes.

1242. That would come to about 10,000 *l.* a year in round numbers?—A little more perhaps.

1243. That would be about one-eighth of a penny on 1,000 gallons?—Yes.

1244. Do you know what they charge per 1,000 gallons distributed?—No, I do not.

1245. Of course that sum, say 9,000 *l.*, would enable you, at $3\frac{1}{2}$ per cent., to raise a very large sum of money?—Yes, it would; but it would not do to consider that the money is to be raised on the whole of that, because there would be the expenses continually going on of the preservation of the river and the scavengering of it.

1246. In the first place, you do not want to raise that money at once?—No.

1247. And, consequently, that would be limited, and it would not be necessary probably afterwards to do so much if you had the power of doing it?—Decidedly it would not be necessary.

1248. But you think it necessary to take a wider margin, and that you ought to have that power?—Yes.

1249. Do you happen to know that the companies are now menaced by a scheme for bringing water from Wales, propounded by no less a person than Mr. Bateman?—Yes.

1250. The arguments in favour of that scheme are very strong, owing to the want of purity in the existing water supply?—Yes.

1251. It would therefore be something in their interest as a defensive weapon if provision were made for increasing the purity of the water?—Certainly.

1252. I do not know whether you have applied your mind to the sum that the five water companies are raising from the metropolis?—No, I have not recently.

1253. Of course you would not have proposed this unless there was some obvious necessity; you would not have looked at this source of revenue unless there was some obvious necessity for it?—Certainly not.

1254. I believe you stated this opinion to the Commissioners, and they have, to some extent, adopted your opinion, without looking to the exact amount?—Yes, I think so.

1255. Passing from that for a moment, let me ask you this,—the water which they take from the stream is regulated, and it is very much oxidised by passing through different weirs and tumbling bays?—Yes.

1256. Still, when it gets into ponds it becomes stagnant water, and deposits, does it not?—Yes.

1257. So that to some extent the navigation works are ancillary to the purification of the water, and rendering it fit to drink?—In other respects too, it is very important to the condition of water, that it should be stored in deep

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receptacles; the navigation provides those deep receptacles; it is very well known that weeds grow fastest where they get the light of the sun to them, and consequently in shallow water they are very much more disposed to grow than they are in deep water, for that very reason, because shallow water being always warmer than deep water, promotes the growth of weeds, which is one of the greatest enemies that water companies have.

1258. I suppose the weeds decay in the water?—Yes; and they give the water a flavour as well.

1259. The water companies suggest that you will not incur any great expense under the powers of this Bill in preventing the sewage flowing into the Thames, and preventing the paper makers' refuse being poured into the Thames?—It would not be safe to say that it would not be an expensive process; the experience of the Conservators certainly points the other way.

1260. Your limited powers to prevent any fresh nuisance being poured into the Thames, are exercised vigilantly?—Yes.

1261. It requires constant watching?—Yes; whenever an unlawful drain is going to be put into the river it is generally put at night, and it is a very important matter that it should be so.

1262. Captain *Vivian.*] Is it often the case that unlawful drains are made at night?—No, I do not think it is; I think the vigilance that is exercised puts a stop to it; it is known to the Committee that the Conservators tried to prevent the discharge of sewage into the river from the town of Kingston; they anticipated that it would very materially affect the condition of the water in the river, and that it was their duty to prevent the sewage coming in if possible; proceedings were taken in Chancery, with a view to stop the discharge, but the Vice-Chancellor would not grant an injunction, and the consequence has been that although the new outlet has not been made into the river, still the house drains have been connected with the existing sewer and with new sewers, which were made to a very great extent; last Thursday night there was a very heavy fall of rain which seems to have had the effect of flushing out the sewer. This specimen was taken at Teddington Lock, just below the outlet (*producing the same in a bottle*).

1263. Sir *G. Bowyer.*] Has that a bad smell?—A filthy smell.

1264. *Chairman.*] Was the lock full of that?—It was.

1265. Captain *Vivian.*] Was that taken out of the middle of Teddington Lock?—It was taken out of Teddington Lock.

1266. After that rain?—Yes; but the whole river from Kingston to Teddington must have been as bad as that, because it had no chance of escaping before it got to Teddington.

1267. Mr. *Peel.*] Was this taken near the source of supply?—About two miles from it.

1268. Is there no chance of pollution between Teddington Lock and Kingston?—No; that simply shows the necessity of keeping the drainage out of the river.

1269. Mr. *Phinn.*] Windsor drains into the Thames, does it not?—Yes.

1270. And I rather think Reading claims to do it, and does it?—It drains into the Kennet.

1271. Oxford did threaten it, but it has turned from the error of its ways?—Yes.

1272. *Chairman.*] How did the fish get on with that?—There were fish that were turned up, but not to any very great extent.

1273. Colonel *Napier Sturt.*] Fish were killed below Kingston?—Not to a great extent; there was a great deal of flacculent matter which was represented in flakes of probably the length of this room.

1274. Captain *Vivian.*] Has that been analysed?—Specimens have been sent to Dr. Letheby for analysis, but I do not know whether he has made his report upon it.

1275. Sir *G. Bowyer.*] That dirt does not come from any particular factory in the neighbourhood, I suppose?—No; I suppose the sewers are to a certain extent in an imperfect state, and therefore it must have been accumulated in some way or other; I cannot conceive if the sewers had been perfect that it would have come out like that.

1276. Colonel *Napier Sturt.*] That is just above the point where the water companies

companies take their water from?—No, below it; it did not affect the water companies' supply at all.

1277. Was it below Kingston?—No.

1278. Mr. *Peel.*] I suppose there is no chance of that stuff having come up stream by the tide?—No.

1279. *Chairman.*] How do you mean that it would not affect the water companies' supply?—The water companies take their supply above this outfall.

1280. Above where the whole of that comes from?—Yes.

1281. Sir *G. Bowyer.*] How can you be sure that some of that dirt did not come from some point above the place where the water companies take their supply?—Because there are no sewers that would at all account for it.

1282. Mr. *Phinn.*] That water is taken just above Teddington?—This was taken in Teddington Lock itself.

1283. The source of supply of these five companies is about two miles up, at Hampton?—No, the Chelsea and the Lambeth companies derive their supply at Ditton.

1284. All above the town of Kingston?—Yes.

1285. We should be subject to that sort of water, for instance from Windsor?—Yes.

1286. Or from Reading?—Yes.

1287. Or from Abingdon?—Yes.

1288. Or from Wallingford?—Yes.

1289. Or from Oxford, till they carry out their design of not pouring their sewage into the river?—I believe their design at present is to pour it into the river.

1290. We were told, yesterday, by Mr. Castle, who is a member of the Local Board, that they did not intend to do that?—I was not aware of that.

1291. Col. *Napier Sturt.*] The town of Hampton drains into the Thames, does it not?—Yes.

1292. That is about one mile above the water works?—It is below the Hampton Water Works.

1293. There are the great water works just above Teddington, at Thames Ditton?—Yes.

1294. Is not the water of the water works affected by the drainage of the town of Hampton?—Those two would be.

1295. There are very large water works there, are there not?—Yes.

1296. Mr. *Peel.*] Do I understand you to say that no sewage had been poured into the river at Kingston?—It was never stopped, but the interlocutory injunction of the Vice-Chancellor went so far as this, to prohibit them from connecting house drains with the main drainage whilst the question was pending, but when he decided not to grant a permanent injunction, the authorities were then at liberty to connect their drains with the sewers, and that sample is the result.

1297. Mr. *Phinn.*] Has your attention been directed at all to the Registrar-General's Report as to the quality of water supplied by these five companies?—Yes, I always look at it when it is published.

1298. Can you tell us what quantity of organic matter there is under the most favourable circumstances, we will say in 1,000 gallons?—I do not remember the figures exactly.

1299. I see, here is a table taken from his Report; just look at it and see if you recognise it at all?—This is September 1865; I know it perfectly well.

1300. Can you give the Committee the quantity of organic matter from the last Report per 1,000 gallons?—It is given in grains per gallon in this Table.

1301. Take any one company, take the most favourable, if you like?—A difficulty has always struck me in comparing these returns, and that is this; that three companies, for instance, the West Middlesex, the Grand Junction, and the Southwark and Vauxhall, take their water from exactly the same point in the river, and yet there is very often a considerable discrepancy in the results.

1302. Take the most favourable, and state the quantity of organic matter in a gallon of water?—I will take the West Middlesex in 1865; the total impurity was 16·62 grains per gallon, and the organic impurity was ·7.

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1303. There is no doubt there has been an improvement since 1851 or 1852, has there not?—Yes.

1304. But still there is great room for further improvement?—Yes.

1305. Now with reference to the water that you took, did not the water that you took come from the same level that some of the water is taken from for the water companies?—Not exactly.

1306. The same point?—Yes.

1307. That water was at a lower level than the point where the pipe was inserted?—Quite so, and the stream was all the time flowing down towards the point where that was taken.

1308. Might not that have affected even the water above the body of water in the same reach and in the same level?—I think not.

1309. Have you considered whether the Conservators, as at present constituted, would be capable, with the addition of three members from the Upper Districts, of discharging the duty with reference to the upper part of the river?—Yes; there would be no difficulty at all about it.

1310. Now, it is suggested that they have not sufficient local knowledge or information; I suppose they would have quite as much as the old Corporation when they went swan-hopping up the river; they might go and visit the river?—Yes; but things are quite different now to what they used to be; the Conservators' jurisdiction now extends nearly as far as Southend, but, in point of time, it would take as long to go to Southend as it would to go to Oxford from London; the time it takes to travel that distance is now a very different thing to what it used to be.

1311. Do you, as an officer of the Conservators, say that you, with proper assistance, could keep an eye over the whole course of the river by the use of railways and so on?—I should have no difficulty at all about it.

1312. We know there are certain gentlemen nominated by the City, and certain gentlemen nominated by the executive, and certain other gentlemen nominated by the parties interested; do you find them work together pretty well?—As far as they know their working they do, but I really am not the best authority for that.

1313. As far as you have had the opportunity of observing, does the present state of things work well?—Yes; I find that recommendations are very shrewdly canvassed.

1314. Do you find that attendance is pretty punctual and frequent?—Very much so indeed.

1315. As you have made this report upon the state of the river, can you tell me, from your local knowledge, whether the interests are of so difficult and complicated a kind that you think the Conservators could not master the rights of each interest properly?—There would be no difficulty.

1316. Do you think you can reconcile the rights of the millowners and the rights of the navigation?—I think they are so identical that there will be no difficulty about that.

1317. Of course you exclude from that the right of fouling the river?—Quite so.

1318. You mean the right of regulating the water?—Yes.

1319. And not the right of fouling the river?—No.

1320. As far as regulating the water so as to preserve the interests of the millowners and the interests of the navigation, do you think that there will be any difficulty in reconciling them?—None whatever.

1321. With regard to these lock owners and weir owners, it is recommended that the control of the weirs shall be given to the Conservators?—Yes.

1322. Do you think that is essential?—Yes.

1323. As far as regards the navigation, do you think it is essential for the preservation of the river that a system of through rates should be established?—I am sure of it; if there is to be any traffic on the river, that is quite necessary.

1324. Do you think that the absolute control of the tolls should be given to the Conservators?—Yes, that it should be in one body.

1325. Do you concur with the last witness in thinking that a great safeguard would be provided for each interest by the proposal that before a bye-law is sanctioned there should be an opportunity of canvassing it, and representing any defects in it by any body affected by it before the Conservators?—Yes.

1326. And

1326. And that, even when they had adopted the bye-law, there should be an appeal to the Queen in Council if any interest was materially affected?—Yes.

1327. Do you think that that would protect every interest on the river?—Yes.

1328. You have that system in operation now with reference to the interests below?—I believe it is; bye-laws have been modified after they have been made.

1329. On the representation of the persons concerned?—Yes.

1330. One of the objections that seems apparent on the face of this Bill is that we do not provide for such a case as Kingston—that is, between Staines and where your jurisdiction commences; we have not taken power to divert from the river existing sewage?—That is the case.

1331. So far the Bill is defective in your judgment, is it not?—It would be a great hardship to require that to be done at once.

1332. But supposing the provisions which are in the Bill were applied to your part of the river, after twelve months' notice, where it is reasonable and proper to prevent sewage being poured into the river, do you think that that is an addition to your powers that would be very desirable?—The limit is open to some question.

1333. But the right is a salutary one?—Yes.

1334. I believe you have appealed now to the House of Lords in this very case of Kingston?—Yes.

1335. Of course that is a very tedious process and a very expensive one?—It is a very expensive one.

1336. Are you of opinion that some tribunal of a more professional nature than the justices of the peace must be constituted?—I think we have generally found the justices of the peace using all the power they have in punishing offences.

1337. You find them effective?—Yes.

1338. With regard to pollution other than sewage, such as tan-pits, do you think it is desirable that they should be excluded?—Certainly.

1339. Do you find any nuisance in your part of the river from tan-pits?—I only know of one.

1340. Have you stopped it, or was it in existence previous to the passing of your Act?—It was.

1341. With regard to paper mills on your part of the river, you have no experience?—We have none.

1342. Have you on any of the tributaries within three miles?—No.

1343. Then that proposal is quite new?—Yes, it is.

1344. Taking the whole of this scheme as it is placed before the Committee, do you think that the principle, whatever amendment is required in the details, is a salutary one?—Yes, I do.

1345. And such as you think would work?—Yes.

1346. And work through the instrumentality of your Board?—Yes.

1347. I believe you have got a picture of one of the weirs we have heard of, Bell Weir?—Yes,

1348. Will you show it to the Committee, and state the condition in which it is?—This is a drawing which I have prepared, as illustrating the defects of this weir—(*producing a drawing, and explaining it to the Committee*).

1349. Colonel *Napier Sturt*.] Does not that sort of breach give some warning?—Yes, it has been giving warning for some time.

1350. It would have been cheaper, would it not, to have repaired it before it broke?—Yes.

1351. *Chairman*.] Are they likely to take any steps to repair it?—I am afraid they have not the money to do so.

1352. They have not enough to repair it even?—No; I have brought this under the notice of the Committee, because this is only one of several others that are ready to go; not precisely in this particular way, but in other ways.

1353. Mr. *Phinn*.] What would it cost to patch that up, even to make it passable?—Merely to make it passable it would cost 200 *l*.

1354. I am afraid the money is not forthcoming, even for that?—They have not 200 *l*.

1355. I believe you brought this drawing before the Committee, with a view

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of inducing some representation to be made to the Treasury, or some public department, to undertake this absolutely necessary work?—It is absolutely necessary, if the navigation is to be maintained at all.

1356. *Chairman.*] Supposing the navigation was given up, and things were left to take their own course, what would be the general effect upon the river?—It would, in course of time, very materially affect the power of the river to pass off the flood water; the channel would be choked up in some places and diverted in others, and it would have a very material effect upon the power of the river to discharge the flood water.

1357. And it would have an injurious tendency upon all the property on the banks of the river, would it not?—Yes.

1358. Captain *Vivian.*] I suppose the bed of the river itself would be altered in some places, would it not?—Very much indeed; where the ordinary channel of a river has been discontinued by a cut being introduced, the part of it that is left to itself will run in all manner of directions.

1359. Mr. *Peel.*] In some parts it would be dry?—Yes.

1360. *Chairman.*] In a hot dry summer it would be full of weeds?—To a very great extent; then the weeds would grow there frightfully.

1361. Mr. *Peel.*] That is one of the old form of locks?—Yes; I have understood that the owners of some barges have made a claim upon the Commissioners for the injury that they will sustain by the barges being detained with their cargoes; they have already done that since this gave way about two days ago.

1362. Mr. *Phinn.*] Then we shall, perhaps, have a test of the responsibility of the Commissioners in a court of law for presumed or assumed negligence?—They may not be considered worth powder and shot.

1363. I do not know whether you adhere to this answer which you gave to Mr. Harrison before the Commissioners to Question 9050; you were asked, "Would you recommend that the Government should encourage the expenditure of the 20,000 *l.* or 30,000 *l.* mentioned before the Select Committee in merely tinkering up the present works on the navigation"? to which you reply, "No; it would be quite thrown away."

1364. Is that your view now?—Yes, it is.

1365. And that unless you go to a much greater expenditure, and a systematic one, it is of no use tinkering up the present works on the navigation?—Yes.

1366. Now, a point has been made with regard to the Upper District of the river, that is, from Oxford up to Lechlade; it has been suggested, and I suppose we shall have it insisted, that the navigation shall be abandoned, except for, at any rate, about 10 miles up to Newbridge; do you concur in that view?—I have no local knowledge of that part of the river; from inquiries I have made when I have been at Oxford and that neighbourhood, I believe that would be the best course.

1367. You can hardly make the people up there pay anything, or contribute in any way?—No; but it would be very beneficial indeed to have the control over that part of the river.

1368. Sir *G. Bowyer.*] What sort of control do you mean?—A control that would prevent extensions into the stream being made.

1369. Captain *Vivian.*] And also the control over the water?—Certainly.

1370. Sir *G. Bowyer.*] Do you mean to say a positive control, or a negative control?—By a negative control, I presume the Honourable Member means that the Conservators shall be able to say, you shall not do certain things.

1371. By a positive control, I should understand a power to require certain things to be done, and a negative control I should think means a power of preventing things being done?—A negative control would be scarcely sufficient.

1372. Then, according to that, it would be necessary to keep up the jurisdiction between Oxford and Lechlade?—To keep up the jurisdiction, but not necessarily the navigation.

1373. To keep up the jurisdiction for the sake of what; for the navigation below?—Yes; and to prevent encroachments on the river; for instance, the Conservators have the power to direct the repairs of the banks; if a bank is washing away so as to injure the general stream of the river, they have the power to require the owner of that land to repair it; I think such a power as that would be absolutely necessary.

1374. Captain *Vivian.*] Do you think it would be impossible to leave the river between Oxford and Lechlade in a state of nature, although you gave up the navigation?—Quite so. *S. W. Leach*, Esq. 6 June 1866.

1375. Mr. *Phinn.*] Although you derive no tolls and no receipts from the river from Newbridge up to Lechlade, and upwards, you would still have to expend money upon it?—Yes.

1376. You have certain powers, I believe, to allow embankments and erections in the river, have you not?—Yes.

1377. I think that is on the shores and in the river itself?—Yes.

1378. I will refer you to the 53rd and 54th sections of the Thames Conservancy Act, 1857 (*the learned Counsel read the same*); do you think that if the upper part of the river is handed over to the Conservators, that the same powers ought to be preserved to them to forbid any embankment which, in their judgment, would interfere with the proper flow of the river?—Yes, that is quite necessary.

1379. I do not know whether you have looked to the Bill to see whether that power is preserved to the Conservators?—I do not remember whether it is.

Friday, 8th June 1866.

MEMBERS PRESENT.

Mr. Acland.	Mr. Neate.
Sir Michael Hicks Beach.	Mr. A. W. Peel.
Sir George Bowyer.	Colonel Napier Sturt.
Mr. Milner Gibson.	Captain Vivian.
Colonel Gilpin.	Mr. Yorke.

THE RIGHT HON. THOMAS MILNER GIBSON, IN THE CHAIR.

Stephen William Leach, Esq., re-called; cross-Examined by Mr. *Brett.*

1380. I SEE that you have spoken about the financial part of this scheme; of course that calculation depends upon the expenditure that it is necessary to make, does it not?—Yes. *S. W. Leach*, Esq. 8 June 1866.

1381. I think you say that you made an estimate of the expenditure to the amount of from 110,000*l.* to 112,000*l.*?—Yes, I did.

1382. When was it that you made that estimate?—Last year.

1383. Have you a copy of the estimate with you, showing the particulars of it?—I have an abstract.

1384. Have you any objection to my looking at it?—Not at all (*handing the same to the learned Counsel*).

1385. I see that this estimate is headed, "Locks, Dredging, Banks, and Weirs"?—Yes; I explained, when I was examined in chief that, that estimate was assumed on the lowest possible scale; I will not undertake to say that that would be at all an adequate estimate for putting the works in the state that they ought to be.

1386. It is headed, "Locks, Dredging, Banks, and Weirs;" therefore, is what you have been estimating the expense of re-constructing or repairing locks and weirs?—In many cases it is repairing only.

1387. And repairing banks?—Yes.

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[*The Witness delivered in his Estimate, which is as follows*:—]

——	——	Locks.	Dredging.	Banks.	Weirs.
		£.	£.	£.	£.
Stone	Oseney	1,236	450	—	—
	Folly Bridge	3,000	500	—	—
Stone	Iffley	3,500	500	—	—
Partly stone	Sandford	600	500	500	—
Stone	Abingdon	1,500	500	—	—
Ditto	Culham	1,200	700	—	—
Ditto	Clifton	1,200	800	400	—
Timber	Days	3,000	800	400	—
Ditto	Benson	1,500	500	—	—
Ditto	Wallingford	3,000	300	—	250
Ditto	Cleeve	3,000	300	—	—
Ditto	Goring	3,000	300	200	—
Ditto	Whitchurch	3,000	200	—	—
Ditto	Mapledurham	3,000	300	200	200
Ditto	Caversham	2,000	300	300	—
Ditto	Blake's	3,000	500	200	—
Ditto	Sonning	3,000	300	100	—
Ditto	Shiplake	3,000	300	—	—
Ditto	Marsh	3,000	300	—	—
Ditto	Hambleton	3,000	200	600	—
Ditto	Hurley	2,000	300	—	300
Ditto	Temple	3,000	400	200	—
Stone and timber	Marlow	2,000	400	400	200
Ditto - ditto	Cookham	2,000	500	—	—
Stone	Ray Mill, or Boulters	2,000	400	—	—
Timber	Bray	3,000	300	100	300
Ditto	Boveney	3,000	1,000	300	300
Ditto	Romney	3,500	700	—	500
Ditto	Old Windsor	3,500	700	500	300
Ditto	Bellweir	3,500	800	—	350
Rebuild 19 / Repair 11 = 30	£.	76,236	14,050	4,400	2,700

1388. Is it the first expense of dredging for the purpose of deepening the channel, and not an annual expenditure to keep it dredged?—Yes; that was only for removing the most prominent shoals, and not all that ought to be removed.

1389. I observe there is a column of names, Oseeney, Folly Bridge, Iffley, Sandford, Abingdon, and so on; are those the names of different locks?—Yes.

1390. Is there a weir at every lock?—No.

1391. Does the first column represent the expenditure that is necessary for repairing the locks?—Yes, the lowest minimum that I could possibly bring it down to.

1392. The second column represents the expense of dredging, does it not?—Yes.

1393. Then the third is the banks, and the fourth is the weirs?—Yes. Will you allow me to state that the reason for making my estimate was this: a sum of from 20,000 *l.* to 30,000 *l.* had been mentioned as a sufficient sum for the repair of these works; according to my opinion, that was utterly inadequate, and I went over them with the intention of forming my own opinion as to the lowest sum that ought to be laid out in order to put them into anything like a proper state.

1394. Then this estimate represents what in your opinion is the very lowest estimate of the repairs that are immediately required?—Yes.

1395. Therefore, instead of 20,000 *l.* or 30,000 *l.*, you would put 112,000 *l.*?—Yes.

1396. Now, I observe that 76,236 *l.* of that is for repairing the locks?—It is.

1397. And 2,700 *l.* for repairing the weirs?—There are very few weirs.

1398. Four thousand four hundred pounds for repairing banks?—Yes.

1399 And 14,000 *l.* for dredging?—Yes.

1400. I think you have told me that, in your judgment, this is the very lowest estimate?—Yes.

1401. So that if the works were to be efficiently done, or in the way you think right, this estimate would be increased?—Yes; but this ought to be taken into consideration as well, that I had no plan whatever to go upon; there is no plan in existence of those works, and therefore I was obliged to form a very crude opinion of the expense of them.

1402. Have you at all visited these locks and examined them?—Yes, every one of them.

1403. Then it was from having visited the locks and seen the state in which they were, that you made this rough estimate?—Yes.

1404. But that is not an estimate on which you yourself would at all rely?—I would not go so far as to say that; I go so far as to say that it would be inadequate to put the navigation into a proper and substantial state.

1405. Now, between last year and this have you at all considered how much more you would require to put that navigation into an adequate state of repair?—No, I have not, but I have no doubt the works are all very much worse than I saw them.

1406. Should you add as much again or half as much again?—I could not say.

1407. You cannot tell now whether the sum required would be 15,000 *l.* or 200,000 *l.*?—I should think that the estimate might very fairly be increased to 150,000 *l.* for doing the work in the way in which it has been suggested; there would also be the question whether other matters would not have to come in as well.

1408. Then you require at once 150,000 *l.* for doing the works suggested in this Paper?—No; not exactly that.

1409. I suppose you have made up your mind as to what are the adequate works which are necessary in order to put the navigation into a fit and proper state?—Yes.

1410. Taking all those works, whether you are to add more weirs, or whether you are to maintain the existing weirs and locks, can you tell me whether you have made up your mind within 50,000 *l.* what the first expenditure will be?—Yes.

1411. How much?—As I said in my examination in chief, 150,000 *l.*

1412. Do you feel at all sure that 150,000 *l.* would do it?—Yes, based upon that estimate.

1413. You have not seen these things since last year?—No; not many of them; I have some of them.

1414. You do not know their present condition?—I know the condition of some of them.

1415. Sir *G. Bowyer.*] In your estimate have you assumed that all the existing locks are to be preserved, and, therefore, repaired?—Yes; I have those below Oxford; I have not assumed that those beyond Oxford are to be repaired.

1416. Are you of opinion that all those locks to which my first question referred, must be preserved and repaired?—Yes, from Oxford downwards.

1417. And also the weirs?—There are very few weirs which have been kept up by the Commissioners hitherto.

1418. Captain *Vivian.*] Does your estimate include any money to be spent above Oxford?—No.

1419. Sir *G. Bowyer.*] You do not think that the works above Oxford were meant to be preserved?—Except Osney Lock; I have stated before, that I have little or no local knowledge of the part of the river between Oxford and Cricklade; but I believe the greater part of it by common consent might be abandoned.

1420. You have no idea what the expense would be of putting the river into a proper state above Oxford?—No.

1421. Mr. *Peel.*] I understood you to say, that for the general purposes of the navigation, it would not be advisable to leave the river above Oxford in a state of nature?—Not for the purpose of drainage; it would be undesirable to leave the river in a state of nature above Oxford.

1422. Captain *Vivian.*] Is Osney Lock in good order now?—No.

1423. Then there would be money required to be spent upon that?—That is in my estimate 1,236 *l.*

1424. Mr. *Brett.*] I see you have estimates against nine weirs, is that the

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number of weirs that are now kept in repair?—Yes; some of them are only partly kept in repair by the Commissioners.

1425. In your judgment, ought there not to be more than nine weirs between Osney and Bell Weir?—There is a weir at every lock, but they are not kept in repair by the Commissioners; they are private weirs.

1426. I understand you have put down for repairing the weirs 2,700 *l.*, as applicable to nine weirs?—Yes.

1427. You say there are weirs at every lock?—Yes.

1428. But the other weirs, except the nine which you have referred to, you have assumed are to be repaired by private individuals?—Yes, when I made that estimate I did.

1429. Supposing that this scheme puts all the weirs into the hands of the Conservators, then you would require to repair them all, would you not?—Yes.

1430. Now, some of the banks you have put down on the repairs of the banks at 4,400 *l.*?—Yes.

1431. Have you examined the banks at all?—Those that I refer to in that estimate.

1432. I will take one as an instance; you have put down 500 *l.* for repairing the banks at Sandford?—Yes.

1433. Are those banks in the immediate neighbourhood of Sandford Lock?—Yes.

1434. Would that be the whole of the bank between Sandford and Iffley, or only in the immediate neighbourhood of Sandford Lock?—It was a bank near to Sandford Lock, the bank on the towing path side.

1435. Then I think I may take this, that you yourself have made an examination of the whole course of the river?—I have.

1436. Have you examined the works here?—Yes.

1437. Should you say that the repairs which you have put down in this paper are all that would be necessary in order to put the banks of the Thames in a fit condition?—No; that refers to banks which are in a very dilapidated state on the towing path side only.

1438. I thought I understood you to say that if you only did the works that are mentioned in this Paper, and did them effectually, you would not think that your estimate ought to be less than 150,000 *l.*?—No, I do not say that; it might be much more than that.

1439. For the works in this Paper?—Yes.

1440. You think the works referred to in this Paper might cost more than 150,000 *l.*?—Yes.

1441. Assume that all the weirs were to be put into the hands of the Conservators, and that you were to repair them all, and assume that you were to repair all the banks along the whole course of the river, have you considered how much you would have to add to the 150,000 *l.* for the purpose of executing all the works?—No, I have not.

1442. Are these works which are necessary for the navigation?—Yes.

1443. Only?—Only for the navigation.

1444. Then if you had to preserve the banks, or do anything to the banks for the purpose of preventing inundation, for instance, would not that rather be a work for the purposes of the navigation?—Yes.

1445. If there were any works necessary to be done for the purpose of assisting irrigation, then you would require a still further estimate; for instance, for enabling the landowners to irrigate their lands, either by the return water, or allowing it to come by degrees from the river, you would require a still further estimate, would you not?—No, I do not see how that would come within the province of the Conservators.

1446. You have not considered that point at all?—No; but I consider generally that if the navigation is put into a proper state, if the works are properly designed, they will assist the drainage of the land.

1447. But suppose that the Conservators are to be at any expense at all for the purpose of keeping sewage out of the river, that is not contained in this estimate?—That in all probability would be a legal expense.

1448. Then this expenditure, with the additions which you have told me, is the expenditure that would be necessary, in order to earn an income from the tolls of the navigation?—Yes, to keep the navigation going.

1449. You

1449. You have told me that it may be considerably over 150,000 *l.*, and that is the first expenditure necessary, in order to procure your navigation income; have you made any estimate at all of what the annual expenditure would be to keep the navigation in repair?—I think that the amounts to be derived from the tolls would in all probability do that.

1450. Have you at all estimated what the expenditure for annual repairs and preservation would be?—Exclusive of the interest on the money which would have to be raised, I think that the amount that the navigation would pay would cover that.

1451. That is hardly an answer to my question, which is, have you estimated at all what the annual sum would be which would be necessary to be laid out for the purpose of keeping the works in repair which are essential for the navigation?—No, I have not.

1452. Have you made any calculation yourself as to what the receipts for the tolls would be?—I have had a great deal of experience upon our own navigation, and I find that the present produce of those tolls is over 3,000 *l.* a year, and I am quite sure, from what I hear, that that amount will be increased.

1453. What do you call your own navigation?—From London to Staines.

1454. From London to Staines, you say, the present receipts are over 3,000 *l.* a year?—No; I said I have had a great deal of experience in that part of the navigation from London to Staines, and I find that the receipts above Staines are a little over 3,000 *l.* a year, and I think—in fact, I am quite sure—that if the navigation were put into a proper state those amounts would be increased, perhaps considerably.

1455. Have you made any calculation as to how much that amount would be increased; would it be doubled, or trebled, or what?—If it were double I think that would be quite as much as may be expected; I think it would, like the trade of the country, increase.

1456. Then the income which you estimate to receive for the navigation, as I understand, above Staines, would be 6,000 *l.* a year?—Yes, that might be very fairly expected, and even more.

1457. You told me you made no estimate of what the annual expenditure would be in order to earn that?—I think that would cover it, exclusive of the interest.

1458. Would it more than cover it?—I could not say.

1459. Then I think your view comes to this, that if somebody else will construct the works for you, or at least pay for the construction, you then think that you can meet the annual expenditure by the annual income?—Yes.

1460. That is as to the navigation only. Do you think that it is a fair principle in England that somebody else should pay for the construction of the works in order to enable you to earn an income. Do you think it is a fair principle that somebody else should pay for the construction of works which should enable those who navigate the river to earn a certain sum?—Not if those works are exclusively to be used for the navigation.

1461. I think you told me that these works were exclusively for navigation purposes?—No doubt they are quite necessary for navigation purposes, but they answer other purposes as well.

1462. What other purpose do you say they would answer; whom would they benefit?—They would benefit the water companies very much indeed.

1463. Anybody else?—Yes, the landowners.

1464. The landowners for the whole length of the river?—Yes.

1465. All the riparian owners, you mean?—Yes, generally speaking.

1466. Anybody else?—Yes, it would be an advantage to the country through which the river passes, because it would provide a means of competition against the railways.

1467. Then you say it would be a benefit to the country through which the river passes?—Yes.

1468. Would it be a benefit to the towns along the banks of the river?—Yes.

1469. All the towns?—Yes.

1470. And a benefit to all the millowners?—Yes, I think it would.

1471. Then, as it is a benefit to all those, in your view, I apprehend it would be fair that all those should pay?—If they could be got to pay.

1472. Does fairness depend upon whether people can be got to pay?—

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Not in the abstract; but you are obliged to look to the practicability of those things.

1473. Does it appear to you, in a moral point of view, to be a fair thing?—No; but, as I said, you are obliged to look at the practicability in these cases.

1474. What I understand you to mean is that the water companies, if I may so express myself, are easy victims; is that it?—No; but I think that whatever is expended on that navigation judiciously, would be a benefit to them.

1475. Do you see any difficulty in obtaining payment from the landowners?—Yes, I do.

1476. What is the difficulty?—There is a variety of circumstances; there are the mode of assessment, and determining the exact benefit which they might derive.

1477. Anything else?—No.

1478. Then the difficulty of determining the exact benefit which they might derive, you think is a difficulty in the way?—Yes.

1479. Can you tell me the exact benefit the water companies might derive?—I can tell you that they would derive a very great benefit.

1480. Can you tell me the exact benefit?—Do you mean in figures?

1481. Yes, in any way you please?—I do not know that I can say more than I did in my examination in chief; I can say they would derive an enormous benefit.

1482. When you spoke of the exact benefit that the landowners might derive, and the difficulty of getting at any amount with reference to money, because you were speaking of the amount to be raised, you meant the money benefit?—Of course, that was it.

1483. Tell me whether you have any notion of what the money benefit to the water companies would be from these navigation works?—Of course I include in that the proper supervision of the river to prevent sewage and so on going into it; I suppose that a body which manages the river properly would attend to all these things.

1484. What is the money benefit to the water companies; you say they would derive a benefit from the water being carefully attended to; how would they derive a benefit from it?—I think it would be of extreme value to them to be able to say that no such stuff as that which I exhibited the other day should be turned into the river to pollute their source of supply.

1485. That is not a money benefit, is it?—You could not put an exact money value on it.

1486. Should you not think that the money benefit must be confined to this, if you can show that they have saved any expense of filtering?—I think not.

1487. That is the money benefit?—Yes.

1488. What other benefit is there; do you assume that they can raise their rates if they get better water?—No.

1489. Excuse me for asking you for an answer; if it does not save them expenditure in preparing the water, and if it does not enable them to get better water, how does it benefit them?—It would give them a very good answer to any competing scheme.

1490. You say it would be a very good thing for them if they could keep out of the river such water as you showed to the Committee on Wednesday?—Yes.

1491. I want to ask you a few questions about that water; did you draw that water yourself?—No, I did not.

1492. Neither did you see it drawn?—No.

1493. Where did you get it from?—I got it from the lock keeper.

1494. You do not know how he took it?—Yes, I do.

1495. Do you?—Yes.

1496. Only except what he told you?—Of course.

1497. Have you ever heard that in 1852, when evidence was given against the water companies that they took the water out, and allowed it to settle, and repeated that operation about seven times, and then brought the seven different sediments in one bottle?—If I brought the sediment, it would be infinitely worse than that.

1498. That was taken, you say, from the lock?—I know it was.

1499. Do

1499. Do you mean to represent that that is the ordinary condition of the water at Teddington Lock?—No.

1500. It is very rarely in that condition?—Very rarely.

1501. You do not know how it was that the lock keeper came to select that day?—Yes, I do.

1502. How?—The water was so exceedingly black and offensive, that he thought it was his duty to take it.

1503. He selected the worse day that he ever saw, probably?—I should think that very likely.

1504. A mere casual and accidental circumstance?—But still a fact.

1505. Captain *Vivian.*] And a fact arising from that refuse being drained into the Thames?—Yes.

1506. Colonel *Napier Sturt.*] And a fact which is now often repeated, I suppose?—Yes, I have myself smelt the sewage coming from that sewer nearly a quarter of a mile off.

1507. Mr. *Brett.*] Besides that, that place is at least two miles below the source of supply of any water company, is it not?—No, not two miles; I thought you meant the sewer out of which that came.

1508. No, Teddington Lock?—Teddington Lock is two miles distant from that sewer.

1509. The Kingston sewer is below the source from which the companies take their water?—Yes.

1510. And the stream is always running down?—Yes.

1511. *Chairman.*] How far above the lock was the water affected in that way?—The whole distance, from the sewer outside the lock; one would have thought at the lock it would have lost a great deal of its pernicious properties; I confess I was very much surprised to see it in that state, but I am quite sure that was taken out of the lock before it had passed the weir at all, that is to say, it had not gone over the weir but had flowed past it.

1512. Colonel *Gilpin.*] What is the distance of the sewer from the lock?—About a mile and a half.

1513. Mr. *Brett.*] You say the river was in that state all the way from the sewer mouth to Teddington Lock; did you see the river when it was in that state?—No, not till the following day, and it was very bad then.

1514. You then did see it?—I did.

1515. Was the river in that foul state from the sewer mouth?—It was not so bad as that.

1516. Have you had an opportunity of seeing the river between Kingston and Teddington Lock?—Very frequently.

1517. Did you ever see it like that before?—Not so far away from the sewer as that.

1518. Sir *G. Bowyer.*] Do you consider that the water of the water companies is in any degree rendered impure or less pure than it ought to be by sewage above the point at which they took the water from the river?—It must necessarily be so.

1519. Are you aware of a plan for bringing water to London from Wales?—Yes.

1520. Are you aware on what ground that plan has been suggested?—On account of the superior purity of the water.

1521. Do you think that if the Thames water was what it ought to be, and what we hope this Bill, if carried into effect, will make it, that the same ground of complaint will still exist against the water furnished by the water companies?—No, I think not.

1522. Then you think that if the Thames were purified, as we propose to do, that the water companies would have this advantage, that there would no longer be a ground for this competing scheme for bringing water from South Wales?—I have a very strong opinion that that would be so.

1523. So far, that would be an advantage to the water companies, because it would secure to them their property and their profits?—Of course it is of vital importance to them. (*Mr. Phinn here handed in to the Committee copies of a Pamphlet with reference to the proposal of Mr. Bateman.*)

1524. Mr. *Brett.*] Have you had occasion to consider what the cost of Mr. Bateman's plan would be?—No, I have not.

1525. Now, you say, as I understand you, in answer to a question from the

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Committee, that if the navigation were improved by these works that you have suggested, there would be fewer complaints as to the quality of the water now delivered in London?—There would be no reasonable complaints then.

1526. Do you know whether there are any really substantial complaints at present?—I see that complaints are very frequently made.

1527. Where do you say complaints are very frequently made?—It is a very common thing; I cannot specify them.

1528. Do you mean in the newspapers?—Yes.

1529. Are you at all aware whether the water companies keep open books for their customers to enter complaints with reference to the quality of the water?—Yes, I believe they do.

1530. Have you taken occasion to examine whether any number of complaints have been made?—No.

1531. You do not know whether any really substantial complaint has been made of the state of the water in London now?—No, I do not.

1532. Now, you say that these works would get rid of all cause of complaint, as I understand you?—No; not the works exclusively, but I mean a proper supervision of the river.

1533. Not the works?—The works would affect the quality of the water very much.

1534. What mischief would these navigation works get rid of in the water?—The effect of them would be, as I before described, that of impounding the water by the weirs, and it would tend to improve the condition of it.

1535. What condition?—Its purity.

1536. Mechanical purity, do you mean?—Yes; and also, I believe, it is an undoubted fact, that the falling of the water tends to purify it too.

1537. It falls over the weirs now?—Yes, to a limited extent it does.

1538. Do you mean that by improving the water in the way you have suggested, that the water will fall more over them than it does now?—A great deal more.

1539. Have you ever tested that yourself at all so as to be able to say the water is purified by falling over the weirs?—No, I have not tested it myself, but I believe that is the received opinion.

1540. Getting rid of the question of the mechanical purity of the water, can that have any other value to the water companies than decreasing the expense of filtration?—No, certainly not, as far as mechanical purity goes.

1541. Do you know at all what the expense of filtering is to a water company?—No.

1542. Have you no idea what it would save?—No, but I know it would improve the quality of the water.

1543. I suppose the principal improvement that you anticipate is from taking the sewage away?—Yes; from the impounding it.

1544. The impounding it would get rid of some mechanical impurity, you say?—Yes, and it would improve it in other ways as well.

1545. What other ways?—It lessens the growth of weeds.

1546. Now, let me ask you about the sewage; do you anticipate that the Conservators are to be also at any expense at all in keeping sewage out of the river?—Not by means of works.

1547. Then by what means are they to do that?—By supervision and taking legal means to prevent it.

1548. Then supervision would impose upon them the necessity of having inspectors to see that sewage did not come into the river?—Yes.

1549. And legal expenses you say, that is, in enforcing the law?—Yes.

1550. Then you would in that case make the clause as to keeping sewage out of the river compulsory?—Yes.

1551. And, therefore, the water companies would get no benefit, would they?—No, they would not, unless the powers that the Conservators now have are extended by this Bill; but that is a lawyer's question.

1552. The Conservators at present existing have that power as to the Lower Navigation, have they not?—Yes, but I rather think those powers are extended to the Upper Navigation by this Bill.

1553. The chief benefit to the water companies, you say, is from keeping sewage out, and the expenditure by the Conservators for that purpose are to be inspectors and legal expenses in enforcing the law, whatever the law may be?—So far as sewage is concerned, yes.

1554. Have

1554. Have you at all estimated what the expense of that supervision and those law expenses would be?—Yes, I dare say it wolud be upwards of 1,500 *l.* a year.

1555. Have you estimated how much of that 1,500 *l.* a year is for supervision and how much for law expenses?—Probably two-thirds of it would be for supervision, and one-third for law expenses.

1556. Then you say that 1,000 *l.* is for supervision, and 500 *l.* for law expenses?—Yes, but that must be a crude estimate, because, supposing a Chancery suit to be instituted, 500 *l.* goes but a very little way.

1557. Do you think that on an expenditure of 1,500 *l.* for keeping sewage out, the water companies should be called upon to pay 9,000 *l.* a year?—That is not the only benefit which they derive by a great deal.

1558. The other is impounding the water?—Yes.

1559. Would keeping the sewage out of the river not be a benefit also to other people besides the water companies?—Yes.

1560. In your judgment would it not be a fair thing, then, that all the people who are to derive a benefit should pay towards the expenditure?—As I said before, in the abstract it would, but you must look to what is practicable.

1561. Do I understand you to take a distinction between abstract justice and practical justice?—No; but upon a question of this kind I look at what is practicable and what is not.

1562. Does it not come to this, that you want money, and money you must get, and if you cannot get it justly you must get it unjustly?—No; I do not go so far as that at all.

1563. That is not what you mean by abstract justice?—No.

1564. Now you say it would be a benefit to other people?—Yes.

1565. You say that your idea of getting money from the water companies would be, as I understand, to make them pay 10*s.* per million gallons?—Yes.

1566. Then you have assumed that the amount of water which they take from the river gives you yearly 9,000 *l.*?—If they increased their quantity it would; it is not 9,000 *l.*

1567. How much do you say it is?—I have taken the returns as they were given by the River Commissioners.

1568. I will read you your answer to a question which was put to you the other day (1240). The question put to you was, "Supposing 60,000,000 gallons a day are taken by the five companies, have you made any calculation as to what will be a fair sum to charge per thousand or per million gallons?" to which you replied. "I put it at 10*s.* per million gallons." Did you not take from some return or other the figures of 60,000,000 gallons a day?—I certainly took those figures, but since that I have taken out the quantities as they were returned to the River Commissioners; I find that in the year 1865 there were 16,820,000,000 gallons, in round numbers.

1569. Taken by whom?—By those five companies; at 10*s.* per million gallons, gives 8,420 *l.*

1570. Then that you put to the Committee, in substitution of what you stated the other day, that it would come to about 10,000 *l.* a year?—This is accurate; as you have called my attention to the exact quantities, just allow me to say that I find from the same return that the New River Company——

1571. You must excuse me, I am not asking you about the New River Company?—But that is a justification for my estimate.

1572. Answer me the question which I have put to you, if you please, about the five companies taking water from the Thames?—I must base my estimate on some data.

1573. If you have based your estimate upon what the New River take, say so; is that so?—Yes, that is a very good guide, I think.

1574. Then you have based your estimate on what the New River Company take?—That is a very excellent guide; I find that in the year 1865 they took 7,051,000,000 gallons, and the rate they paid for it was about 10*s.* 2*d.* per million, and that was a rate settled 14 years ago.

1575. Do I understand you to take 10*s.* per 1,000,000 gallons, upon the ground that that was what the New River Company pay?—It is a very fair guide, you could not have a better one.

1576. Is that the reason why you have taken 10*s.* per 1,000,000 gallons?—I cannot say that that is the reason, but I find in working it out that that is so.

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1577. Do you know to whom the New River Company pay that?—To the River Lea trustees.

1578. Do you know under what circumstances the New River Company entered into that arrangement, do you know the particulars of the arrangement under which the New River Company pay any money to the River Lea trustees?—It is for the privilege of taking the water out of the river.

1579. Do you suppose that?—Yes.

1580. Merely for that?—I will not say merely for that.

1581. You do not know what sum the trustees of the River Lea have paid, or what expenditure they have been at, or how it came to pass that the water companies agreed to pay that sum?—That would be a very parallel case.

1582. Do you know the circumstances at all?—No, I do not, beyond what I see from the returns.

1583. Are you aware that the rates of all the companies are limited by Act of Parliament?—Yes, I believe they are; I have here a clause which gives power to the East London Company to take water from the River Lea under certain regulations; do you wish it read?

1584. No, thank you, I do not see why it has been handed to you; those are not the circumstances under which they agreed to pay the money. Will you answer me one or two other questions; you say you do know that the rates of all the companies are limited by their Acts?—Yes; I believe so.

1585. Do you not know that in 1852 Parliament required all those companies to remove their sources of supply above Teddington Lock, and that in order to enable them to do that an Act of Parliament was passed?—Yes, and a very merciful Act to the companies, too; they could not possibly have filtered their water if they had not removed their source of supply.

1586. Do you know on that occasion that in almost every one of the Acts the company was required to go to a large expenditure to improve their works, but that they were not allowed to increase their rates?—I dare say that was the case, but it was a necessity with several or all of them.

1587. Do you not know that was done with the consent of the Committee of the House of Parliament, which then sat, that if the companies would undertake to remove their works, that they should be allowed to preserve their then rates, but should not be allowed to raise them; was not that the Parliamentary arrangement?—I cannot speak positively; I think it is very likely.

1588. Do you know that the company which I represent, the Chelsea Company, by virtue of that Parliamentary arrangement, has spent 400,000 *l.* in removing their works to Kingston, for their supply of water to London?—I think it very likely.

1589. Are you aware that they are now increasing their works, erecting new engines, and putting down a new pipe from Kingston to London, for the purpose of increasing their supply?—They are doubling their engine power, I know.

1590. And that all that must be done without any power to increase their rates?—Yes, it answers their purpose very well.

1591. Do you think that the consumers of water would be pleased to have their rates raised?—No, nor do I see the necessity for it as far as this question is concerned; I think the consumers would be exceedingly pleased to know that no sewage was turned into the river, and that they were not drinking that.

1592. If they had not to pay any more for it?—Or even if they had.

1593. Sir *G. Bowyer.*] Do you know anything of the quality of the water furnished to the inhabitants of Chelsea by the Chelsea Company?—I believe it is very good.

1594. I wish to call your attention to what you said in answer to Question 1259: "The water companies suggest that you will not incur any great expense under the powers of this Bill in preventing the sewage flowing into the Thames, and preventing the paper-makers' refuse being poured into the Thames?—It would not be safe to say that it would not be an expensive process; the experience of the Conservators certainly points the other way." What expense do you refer to when you say that it would not be safe to say that it would not be an expensive process; do you mean to keep out the sewer and the refuse from the paper makers?—If you have to fight a Chancery suit over it, and if after that you have to appeal to the House of Lords, that is a very expensive process.

1595. Then

1595. Then it is law expenses?—They are uncertain expenses, and great expenses, no doubt.

1596. I presume that what you want to get from the water companies is a certain sum of money?—Yes.

1597. And that is for the purpose of raising the money which you want for the original construction of the works?—It would be employed in that way, I have no doubt.

1598. You have stated that when the works are completed that, in your judgment, the tolls which you will receive will pay the expenses?—Yes, I think that is a fair estimate.

1599. Then what you want from the water companies, if the Committee think it right to give it, is that there should be such a sum supplied by them, or paid by them, as would enable you to raise a specific sum for the purpose of constructing these works?—Yes, and I think that it would be exceedingly fair.

1600. That is what you want?—The water companies have received their water for nothing hitherto, and they have been very fortunate.

1601. From whom have they received it for nothing?—From the river.

1602. Who do you mean by "from the river"?—In the same way that the New River Company receives theirs from the River Lea.

1603. Is it the same way?—I think so.

1604. You think it is; do you take the River Lea to be the same kind of river as the River Thames?—Whether it is exactly the same kind of river, I do not think matters at all.

1605. Do you know whether there is any Act of Parliament which has given the property of the River Lea to the trustees of the River Lea?—I do not know that.

1606. You do not know any of the circumstances?—I do not know the circumstances.

1607. Do you know whether the trustees of the River Lea, in order to give the quantity of water to the companies which they required, were obliged to buy up certain mills?—Yes; that would be equivalent to laying out money here.

1608. They were obliged to buy up mills?—It may be so; I think that is very likely.

1609. Then they will be put to an expense, in order to get the water for the companies to supply them with water?—Yes.

1610. Now you say the principal benefit which the water companies are to derive from this scheme, will arise by keeping out the sewage?—I have said all along it would improve the quality of the water.

1611. But the principal is keeping out the sewage?—That is one element, but not the principal element; it is an important element.

1612. Do you say it is the principal element or not; is it the most important element, is it not really the important part of it; do you not think it is substantially important benefit which you think they can get?—No, I have not said that at all; I have said it is an important element, but the proper preservation of the river is equally important, and perhaps more important.

1613. Sir *G. Bowyer.*] Are you aware of Appendix 14 to the First Report of the Commissioners upon the Pollution of Rivers; it contains in the 5th column the proportions of organic matter, and other volatile matter in the water, furnished by the different companies?—Yes.

1614. I see that the water of the Chelsea Company contains the largest amount of organic matter?—Yes.

1615. The quantity is stated to be 2·59?—Yes; that makes me think that the water companies are hardly fairly treated in these analyses; the Chelsea Company is at the top of that, and the Lambeth is at the bottom, and they both take the water as nearly as possible from the same point in the river.

1616. How do you account for these figures; I will read them to you: "Chelsea, 2·59; West Middlesex, ·00; Southwark and Vauxhall, 2·40; Grand Junction, 1·60; Lambeth, 1·65;" so that there would be more impurity in the Chelsea water taken from the Thames than in that of any other company?—It would be so according to this analysis, but that is not to be relied on; it is impossible there can be that difference between the Chelsea and the Lambeth, because their sources are almost identical.

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1617. Captain *Vivian.*] The process of the two companies may not be the same?—That may be so.

1618. Sir *G. Bowyer.*] I suppose Professor Frankland, who made these analyses, is an able man, is he not?—Yes; but there must be some different circumstances in taking the samples, because otherwise I cannot account for it.

1619. Mr. *Brett.*] You think that is stated in this Appendix is not to be relied upon at all?—Knowing the fact that the water of the Chelsea and Lambeth Companies comes from the same source, or, at any rate, that they are not more than 200 or 300 yards apart from each other, I cannot account for the difference.

1620. Sir *G. Bowyer.*] Your argument is an *à priori* argument, but Professor Frankland's is an *à posteriori* argument; he gives those figures as the result of his analyses, but you say they cannot be correct?—I do not mean to say that that was not the result of his analyses, but I say the specimens can hardly have been taken fairly; I do not mean to impute that Professor Frankland took the specimens unfairly, for a moment, but what I say is, that the specimens could not have been taken under equal circumstances.

1621. But Professor Frankland made his analyses, no doubt, after the waters were purified by the companies, and not after they were taken from the Thames?—Yes.

1622. Captain *Vivian.*] The processes of the different companies may be different; the Lambeth Company may purify their water better than the Chelsea?—Yes.

1623. Sir *G. Bowyer.*] Just look at the other column, which contains the solid matter in 100,000 parts of the water; you will see that the Chelsea is 31·14; West Middlesex, 30·40; Southwark and Vauxhall, 30·90; Grand Junction, 31·40; Lambeth, 31·16; so that it appears there that the Chelsea Company have the advantage?—Yes.

1624. Colonel *Gilpin.*] You say the analysis made of the water one week varies from the analysis which is made in another week?—Yes, I say the result of the analysis varies from week to week.

1625. Sir *G. Bowyer.*] I suppose all the specimens were taken at the same time?—They must have been taken, of course, from different sources.

1626. But on the same day?—Yes, in all probability; but you will observe that the solid matter per 100,000 parts of water is after it had been filtered.

1627. I take it that all the analyses were made after the water was filtered?—Yes, but they are pretty even in quality, as far as filtering affects them; the difference is in the organic or volatile matter; it is difficult in my mind to account for those variations.

1628. In fact, this Appendix is worth very little or nothing?—No.

Cross-examined by Mr. *Toulmin Smith.*

1629. I think the public is indebted to you for the suggestion of taxing the water companies, for the purposes of the navigation?—No; I was not the author of it.

1630. I see in your evidence given on the 24th January 1866, before the Rivers Commissioners, at Question 8926, you are asked this: "May we take it that the evidence you then gave represents your present opinions on the same points?" to which you answer, "Yes, except in one respect; I stated then that I thought it not of much importance to the supply of water to the companies that the weirs should be maintained; I said that I thought the water would find its way down; I think, however, that it would be an advantage that the water should be arrested by those weirs, and that ponds should be formed;" you recollect that answer?—Yes.

1631. You did not think in May 1864, that it was of importance, but in January 1866 your eyes became suddenly opened to that important fact?—Not exactly important; I did not consider that it was important then, but further reflection has satisfied me that it is.

1632. At any rate it became coincident with this suggestion of taxing the water companies?—No, I do not think it was; I had arrived at it in the interval.

1633. Between

1633. Between May 1864 and January 1866?—Yes, my opinion of it was very much strengthened in the interval.

1634. With respect to the Conservancy Board, of which you are now the engineer, the position of that Board is very different with regard to the jurisdiction over the river from Staines to Yantlet, from the position of the Thames Commissioners with regard to the river from Staines to Cricklade?—Not that I am aware of.

1635. Does not the soil and the bed of the river, and all the foreshore, become absolutely vested in them under the Act of 1857?—Yes, I believe it does; but that is really a lawyer's question.

1636. At any rate, in neither case is any property whatever in the water vested in the Conservancy Board?—My opinion upon a legal question is really worth nothing at all.

1637. But after 24 years' experience of the Conservancy Board, you must know something about their rights to the water?—This is a new Bill, you know.

1638. You have certain powers over the navigation, one of which is the power of granting licenses to pass along in boats?—Yes; I think those powers are proposed to be given to the new Commission.

1639. With respect to the estimate of which we have heard so much, you have expressed in very strong terms, both in your evidence before the Commission, and in your evidence on Wednesday, that your estimate of 112,000 *l.* is one which is the least for which the works can be done?—Quite so.

1640. You do not at all agree with Mr. Castle, that the works can be put in an efficient state for 30,000 *l.* or 50,000 *l.*?—No, I do not.

1641. You stated, in answer to my learned friend, that the estimate of 112,000 *l.* only contemplates works between Staines and Oxford?—Yes.

1642. From your evidence on Wednesday, and also from your evidence given before the Commission, in the beginning of the present year, you appear to think it very important that something should be done above Oxford?—Yes, I do.

1643. That, I apprehend, will cause some addition to be made to your estimate?—Yes.

1644. Are you able to state the figures of the additional cost?—No, I am not; I have said already that I am not well acquainted with that locality.

1645. Being familiar from your long experience with the cost of dredging, and so on, on the river, you cannot state with certainty that the expenses to be so added to this estimate of 112,000 *l.* will not be very great?—As far as the banks are concerned, I do not think there will be any expense thrown on the Commission; because, when the navigation is abandoned, this Bill will give power to the Conservators to call upon the proprietors to repair their banks themselves.

1646. Inasmuch if the investigation is abandoned, the locks and things of that sort, which are only necessary for the purpose of navigation, would not require restoration, do you not think that the only expense would be in removing them?—I have not considered that.

1647. In your estimate of 112,000 *l.* have you recommended the alteration of any of the locks. I perceive in your evidence before the Select Committee of the House of Commons, and also in your evidence before the Commission, and also in your Report presented to your own body in 1864, you dwell strongly on the desirability under any circumstances of removing one of the locks; will you allow me to read you a passage from your Report of the 23d July 1864, "If means could be adopted to arrest the destruction which seems to impend over this navigation, and to restore the works to a state of efficiency, it might be well worth consideration whether in some cases one lock might not be substituted for two, and thus future expense of maintenance be saved as well as existing impediments removed;" do you adhere to that opinion?—Yes.

1648. Was your estimate founded on the restoration of all the locks which now exist, or in several cases substituting one lock for two?—Restoring the present locks.

1649. Then if, as you here recommend in some instances, you substitute one lock for two, will not the expenses necessarily be reduced?—I think I have guarded myself throughout by saying that there was no plan or section upon which I could determine accurately what amount would be required.

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1650. As you have made the suggestion, and repeated it after consideration, the inference would be that if this estimate of 112,000*l.* was made to restore the whole of them, and in some cases putting in one instead of two, the estimate is too large?—No, not necessarily so; the substitution of one lock for two might involve the purchase of mills and questions of compensation; it might render the future maintenance less expensive, but it would not reduce the estimate for the works.

1651. Mr. Castle told us the other day, that all the works to which his estimate and yours refer, are included in section 42 of the present Bill; have you considered what is the practical effect of that section; section 42 is as follows: "On the passing of this Act, the property in all locks, dams, and weirs, then existing in or on the stream or bed of the Thames (as far as the same is not then vested in the Commissioners) shall be, and the same is hereby, absolutely transferred to and vested in the Conservators, who shall maintain and repair those locks, dams, and weirs, unless and until removed by lawful authority, and all obligations on any person as owner or occupier thereof, or of any mill or lands to maintain and repair those locks, dams, and weirs, or any of them shall absolutely cease," so that these weirs become vested in the Conservators, and they are obliged under this Bill to maintain them and repair them; how many weirs are there in the district between Staines and Oxford?—I think there are about 20.

1652. What would be the expense of restoring the weirs in the condition in which those now are?—I could not say at all; because when I went over that part of the navigation I was not aware that it was contemplated to purchase them.

1653. When you went over that part of the navigation, did you leave out those weirs, or did you include them?—I left them out.

1654. Are there as many weirs there which are the property of private persons, as there are weirs which are the property of the Commissioners?—I think there are seven or eight which belong to the Commissioners; they have only a portion of the weirs.

1655. I think you gave us, in the estimate which you have handed in, 2,000*l.* as the cost of repairing those weirs?—£2,700.

1656. If those eight or nine cost 2,700*l.*, this estimate will not be very largely increased?—I could not undertake to say that; I think it possible it would be largely increased.

1657. We want to get a definite idea of what the expense will be, but we have only the datum line of your own, 112,000*l.*; we want to see what is likely to be added to it; the only question is, whether those things are of a costly nature, or whether the other works are of a costly nature?—I think it very likely that they would be of a costly nature.

1658. Within what time would it be necessary that the whole of this 112,000*l.* should be expended; I think I understood you the other day that you need not do the whole of them on the instant, but that you would only at the outset execute those works which were urgent?—I dare say it would take four or five years.

1659. If you had a return for the navigation that would help you to carry on your works?—I am afraid not; I do not think that the returns would be available for rebuilding works.

1660. You think they would be only available to meet current expenses?—Yes.

1661. In your evidence on Wednesday I find that my learned friend, Mr. Phinn, asked you this: "This Bill contemplates prevention rather than cure, that is to say, the prevention of any impurities being poured into the water?—Yes. Do you think it desirable that, if that could be secured for the river companies (I may use that term to avoid enumerating them) that they should pay something for it as a contribution?—Yes, for that is rather an expensive process." You do not intend yourselves, that is to say, the Conservancy Board, to spend anything in that respect; what would the expensive process consist in that you refer to in that answer?—I have stated it already in my cross-examination.

1662. Do you mean the supervision of legal expenses?—Yes.

1663. Have you not in the same evidence given as a special reason why you should have large powers given by this Bill, that you have incurred law expenses, and that you ought to have powers given to you which would prevent the

the necessity of your incurring those expenses for the future?—No, I do not think so.

1664. You have stated that you incurred heavy expenses with regard to the Chancery suit about Kingston, and that you are going to appeal from the decision of the Vice-Chancellor to the House of Lords?—Yes.

1665. The suggestion is clearly intimated here that you ought to be saved those expenses?—That we should have a fund out of which those expenses might be paid.

1666. You only estimate your legal expenses at 500 *l.* a year?—I stated that I put down 500 *l.* for law expenses, which was a very indefinite sum for such a purpose.

1667. Will you tell me what you mean by the supervision which will result in a great benefit to the water company?—It was a very frequent practice to throw dead pigs into the river, and it was represented that these pigs were floating about the stream until they dissolved or went to pieces, and it is the same with dogs; but it would be very important indeed that the consumers of water should know that those things are not permitted.

1668. That is not a very costly affair?—The supervision is costly.

1669-70. I read in your evidence given before the Commissioners, the following: "*Q.* 8937. Do you see any impracticability, if you had a staff of workmen placed at your disposal, to prevent dead animals floating on the river until they became putrid?—*A.* No. *Q.* Might they not be taken out and buried at no very extravagant cost?—*A.* Yes." I suppose you have not changed your opinion upon that point, that this will not be a very extravagant process?—No.

1671. You stated in your evidence given yesterday, that "It is of vital importance to the water companies that the water should be preserved in the very best state, that it would be nothing but fair to expect a contribution from them towards the expense of the works, and towards the maintenance of them." I want to ask you what are the special works on this navigation which are of the most value to the water companies; I presume that locks are of no use to the water companies?—The locks are a necessary part of the works.

1672. I think if you refer to the estimate which you put in, you will find that the expense of locks is something like seven times as great as the expense of weirs?—It is impossible to have weirs without locks.

1673. That is for the purpose of navigation?—If you put weirs into the river for any purpose, say, for damming the water up, so as to improve its quality for the use of water companies, it is absolutely necessary to have locks.

1674. In a navigable stream it is?—It was very well to make a division, but it is one and the same work.

1675. You have made the division?—The lock is part of the weir.

1676. I am looking at it now with reference to the water companies' supply?—Neither the water companies nor anybody else would be allowed to put a number of weirs into the river so as to stop the navigation entirely.

1677. Do you enforce all the powers which you have under your existing Acts for removing impurities from the river?—I think so.

1678. I think in the Act of 1857, and the Act of 1864, there are very large powers given?—Yes.

1679. How is it, if you have enforced those large powers, that you produced that black draught which so frightened us all on Wednesday?—We put in operation all the powers we were possessed of, and we were defeated.

1680. Have you put in operation the 74th section of the Act of 1864, which is to this effect: "If any person without lawful excuse . . . . . causes or suffers any washing or other substance produced in making or supplying gas, or any other offensive matter, to flow or pass into the River Thames, or to flow or pass into any river, stream, cut, dock, canal, or watercourse aforesaid, within the distance aforesaid, so that the same will be carried or be likely to be carried by, through, or out of the same into the River Thames, he shall for every such offence be liable to a penalty not exceeding twenty pounds;" have you put that in force?—Yes.

1681. You are familiar with that enactment?—Yes.

1682. I observe that in January last, at Question 9101, the Chairman asks you this: "I suppose you know that the sewage of the whole district goes in?" to which you answer "Yes"; then Professor Way asks you, "Have you any power

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to prevent that?" your answer is, "None at all." Now by the terms of the Act of Parliament to which I have called your attention you have large powers?—The whole subject was before Vice-Chancellor Wood, and he decided that we had no power to prevent it.

1683. That only proves that you have endeavoured to do what you could under the powers which you already have, and that those powers are not large enough?—Yes.

1684. Are you not aware that the proposed Bill, instead of enlarging your powers really very much contracts them; have you looked through the Bill?—Yes.

1685. You would be anxious, as I am sure you would, to carry out the works here authorised with zeal and fidelity, so as to make the river in as good a state as possible for everybody concerned; but instead of enlarging the powers which you already possess, if you look at the sections from 47 to 52 you will perceive that they actually make illegal that which is now legal, because the law now says that any person committing any nuisance upon the river shall be prosecuted. If you look at section 50, you will see that it is in these terms:—"Provided, that in any prosecution for the misdemeanour aforesaid, the defendant shall not be liable to conviction if he shows to the satisfaction of the justice or justices, or court by whom the matter is heard, either of the following things, namely, first, that the act or thing complained of does not injure or tend to injure the water of the Thames; or, secondly, that it is not reasonably possible for him to discontinue the doing of the act or thing complained of." So that he has here given an opportunity of saying that he has not had a reasonable opportunity for removing it. Do you think that is a reasonable thing?—I think that is the only practical view of it; the Act of 1857, I believe, reserved the powers to turn the sewage into the river that there were before that Act was passed.

1686. I think you will find that is not so; but, however, we will not detain the Committee upon that point now. You are probably aware that in the latest case of that sort that was the plea set up, and Vice Chancellor Wood said it was no plea?—I only know what Vice Chancellor Wood said in the Kingston case.

1687. At Question 8940, before the Rivers' Commission, you were asked this:—"Would it be reasonable to have the same thing done throughout the whole length of the Thames where the water is used either for ornamental purposes or for water supply?" to which you answer, "Yes, I think that the companies might fairly demand such a thing as that to be done, supposing that a rent-charge was imposed upon them." Then in the next question you are asked, "Might not the companies also say to Parliament, 'Give us a guarantee that pumping the undiluted sewage of the towns and villages upon the banks of the river shall not pass directly into it?'" to which you answer "Yes." Do you adhere to that?—Yes.

1688. That those are the conditions on which alone the water companies should be asked to contribute?—I did not say that; I did not say that those were the conditions alone.

1689. The question was asked you, might not they claim that?—Exactly, they might claim it, but that would not be the only condition; you said the only condition.

1690. An essential condition, the *sine quâ non*?—I do not say the *sine quâ non*; it is an important condition.

1691. Do you admit that it ought to become the duty of the Conservators of the Thames to remove or cause to be removed these sources of pollution?—Yes, and they are provided for in the Bill.

1692. If the water companies are to be called upon to contribute anything, should it not be made obligatory, or else the water companies do not get their *quid pro quo*?—I think that is quite fair.

1693. We ask nothing more than that; with regard to the embankment of the Thames, of which you have spoken in several parts of your evidence, you say that the different persons who are the owners of the banks are required to keep them in repair?—Yes.

1694. You think that is very important?—Yes.

1695. Are you aware that in this Act of Parliament there are two clauses, one of which makes it lawful for the Conservators to grant to any owner the power to make embankments and so forth on the river, and then it goes on to say,

say, that it shall not be lawful for any person to make any such embankment without a license?—Yes.

1696. Are you aware that in the Bill which is before us, and, I must say, this extraordinary Bill, a very important section is cut out. At the end of section 40 of the Bill are these words, "Save that nothing in this Act shall extend to the Thames, as defined by this Act, the provisions of sections 58, 103, and 104, of 'The Thames Conservancy Act, 1857'"?—I cannot say that I remember that.

1697. You will take it from me that it is there as I am reading it?—Of course.

1698. Section 58 of the Act of 1857 is the one which defines what the consideration shall be, without which no license for an embankment shall be given?—Yes; I think the circumstances are quite different.

1699. One section says that they shall have a license at a certain assessment, and the other says that nothing shall be done without that license, and that license is not to be granted without consideration, and you cut out the clause which declares what the consideration shall be?—The Act of 1857 arose out of a compromise between the Crown and the Corporation of London.

1700. You think, at any rate, that the power of granting a license should not be hampered, I suppose?—No; that is a very desirable matter.

1701. You ought to have the power of requiring that the embankment should be kept up by the owners?—Yes, that is very important.

1702. You are aware, as to the costs that a witness has told us, that the Conservancy Board are liberal enough to pay all the costs of this Bill?—The Conservators do not promote this Bill.

1703. At any rate, it is the proposal of the Board of Trade that the Conservancy Fund shall pay the whole costs and expenses of the Bill?—I believe the Conservators object to that provision.

1704. That is not one of the charges which is to be thrown on the new Conservators of the Thames?—I hope not.

Cross-examined by Mr. *Holland*.

1705. I observe, in the evidence you gave before the Commission, at Question 8926 and following questions, there is this, "May we take it that the evidence you then gave represents your present opinions on the same point?—Yes, except in one respect; I stated then that I thought it not of much importance to the supply of water to the companies that the weirs should be maintained; I said that I thought the water would find its way down; I think, however, that it would be an advantage that the water should be arrested by those weirs, and that ponds should be formed; do you think that any similar improvement of the Upper Thames, or any of the Thames tributaries, would in the same degree be an advantage to the great water companies now using the Thames water?—I think it would. And works for purifying the water and preventing sewage or noxious matter flowing into the Thames, would also be a benefit to the water companies?—Decidedly. For any works of that character tending to equalize the flow of the water to increase the minimum volume, and to purify the water, do you think one might fairly look to the companies to contribute some portion of the expense in the shape of an annual rent-charge for the water taken?—I think so." I did not observe in this Bill any power that would enable you to increase the minimum volume, which is one of the terms on which you think that the water companies might be charged. You were asked before the Commission this question, at 9037, "As an engineer knowing the general character of the country, I suppose you think it is quite possible to find sites where such reservoirs might be made?—Certainly." In this Bill there are no powers given to take land to make reservoirs?—No.

1706. Therefore, as to one matter which you think ought to be made, powers are not given to carry it out?—I think that the carrying out of such works as I contemplate would have an immediate effect on that minimum quantity.

1707. Do you think under this Bill you have power to make reservoirs?—No.

1708. Therefore, on terms decidedly advantageous to the companies, you would not be able to carry it out under this Bill?—No.

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1709. Not the reservoirs?—No; but regulating the quantity would have an important effect on that.

1710. How would you propose to regulate the minimum supply of water, except by reservoirs?—The navigation is carried on now by a system of flushes; the water is all run off, and then the millers shut down their gates, and the weirs are shut down, so as to accumulate a head of water, the consequence of which is that the stream of the river is actually shut off, and we suffer very much indeed in our navigation from that; on certain days, after those flushes have occurred and the mills have been shut off, we have little or no water in the river.

1711. Sir *G. Bowyer.*] Supposing nothing is done to the Thames above Staines, what would be the effect of that in a few years; I mean, supposing nothing at all is done to restore the proper condition of the Thames, as a river, above Staines, what would be the effect upon the river?—The effect would be that it would be left to take its own course.

1712. What would be the result?—That shoals would be formed in the river, and encroachments would be formed on the land in different places.

1713. What would be the state of the river?—A general divergence of the channel; of course, as shoals grew up and the channel became more tortuous, the drainage of the adjoining districts would be more imperfect; and then, again, the interests of the millers would be entirely sacrificed, because the dams which would be put in would very materially affect their supply.

1714. The river in some cases would positively run dry?—I do not think it would run dry.

1715. The flow of the water about Oxford would be considerably injured and damaged, as I understand you, if nothing was done to put the river in proper order?—The condition of the water would be very much damaged.

1716. And the supply of the water?—Yes, and the supply too.

1717. That would be very much injured?—Yes.

1718. *Chairman.*] It would not be economised?—No.

1719. Sir *G. Bowyer.*] That would be very injurious, of course, to the water companies?—Yes.

1720. Consequently the water companies have a substantial interest in the Thames being kept in a proper condition up to at least Oxford?—I think so.

1721. If that was not done, the water companies would probably suffer?—Yes, I have no doubt they would.

1722. I presume it would then become necessary for the inhabitants of the towns to go to South Wales for their water?—I do not know whether that would be necessary.

1723. It would probably lead to that result, would it not?—I think it is very likely.

1724. Probably they would go then to the Severn for their water?—Yes.

1725. Mr. *Holland.*] I understand you to say that if there was nothing done to the Thames, there would be a loss to the water companies, and that the water would run off, and that the supply would be irregular; now, putting the Thames in a perfect state of navigation, laying out the sum that you have estimated, or laying out a much less sum than that for the purpose of regulating the supply, would not the water companies be benefited by keeping the weirs and locks?—Yes.

1726. But if the locks were kept up as they are at present, they would regulate the supply?—Yes.

1727. Without laying out all the money which you are proposing to lay out upon it?—It does not regulate the supply to us.

1728. Has there been any complaint of the supply of the water companies?—No, I do not think there has.

1729. Whether it is properly regulated or not at present, there has been no complaint of a want of supply?—But the consumption is increasing very much indeed.

1730. But at present there has been no complaint of a want of supply?—No.

1731. With reference to reservoirs, are you aware that Mr. Denton, who has had a very large experience in land drainage, stated that there should be reservoirs for regulating the minimum supply of water of the water companies, and he

he thought that it would be of great advantage to them; did he not state that in his evidence before the Commission?—Yes, I think he did.

1732. I find the Honourable Member for Oxford said, in answer to Questions 528 and 529, "Do you say that there would be no hardship in the money being raised by a rate?—No; my idea of a rate is this, I would put so much upon the boroughs and so much upon the counties. Would there not be a difficulty with regard to levying the rate?—I do not know that there would be; it would be added to the county rate." Therefore I apprehend the opinion of the Honourable Member also was that a rate should be spread over all parties interested, and I think afterwards an instance was given of it in answer to Question 2083, before the Rivers' Commission, where it was stated, "The counties in Ireland have been made to contribute to put the Shannon into a good state." If a rate was practicable you would be of the same opinion that a rate should be enforced?—If a rate was practicable.

1733. Your only doubt is whether it was practicable?—Yes.

1734. Are you also aware that a great number of riparian proprietors, who were examined before the Rivers' Commission, all expressed their willingness to pay a certain sum?—I have read that evidence.

1735. You are aware that all the riparian proprietors who were examined were willing to pay a certain sum, are you not?—Mr. Ward, in answers to Questions 1376 and 1378, thought that the riparian proprietors should all be made to pay something; Mr. Dashwood thought the landowners should all be made to pay; Mr. Hedges, in answer to Question 1712, thought that the mill proprietors should be made to pay; Mr. Walker, Mr. Chillingworth, Mr. Vansittart, and Mr. Nelson, who is the solicitor for the City of London, thought that the whole drainage area might be made to pay; and Mr. Walpole thought that the tax might be put on the Local Boards; therefore there is a willingness on the part of riparian proprietors to contribute something towards this?—On the part of individual proprietors.

1736. Many of them expressed the feeling of other riparian proprietors?—I think only their own.

8737. As you say that, I will just refer you to Mr. Chillingworth as a sample; I will just read Question 6454: "The property to be so rated would be very large?—Yes, with a moderate rate, the amount raised would be very large, for very extensive property would be benefited; I am convinced of that from having seen the letters that were received by the Committee from persons who were not present, but who authorised the vicar and the secretary to put their names down for almost any sum; the Duke D'Aumale and many of the inhabitants said, 'Put my name down for any amount you think right, this state of things must be remedied.'" I give that as an instance of one?—That has reference to a particular work.

1738. But it has reference to a particular weir?—I do not think you can fairly take that as a specimen.

1739. I see again, Question 6452, "I suppose that you, as a riparian proprietor, contemplate having something to pay for any work that may be done to improve the river and the adjacent property?—If it came in the shape of a rate, I should have no objection to it;" he is speaking there of some works?—Yes, that is his individual opinion.

1740. Now, as regards the sample you have produced, I understood you to say, that that was from water which would not in any way affect the water companies, because it was taken below where they took their supply?—Yes.

1741. There is no tide there to flush that back?—No.

1742. The people who would be benefited by the purification of such water as you have produced to us are the people of Kingston?—I merely brought that forward as an instance of what might affect the water companies.

1743. Now, the Conservators have received something like 1,400*l.* a year under the agreement of June 1852?—No.

1744. Yes, it is quite 1,400*l.*?—Do you mean by those annual payments?

1745. Four companies pay 300*l.*, and one more?—And one less.

1746. £1,400 a year has been received by the Conservators from the companies since June 1852?—Yes.

1747. That was paid in respect of works done which were necessarily occasioned by their supply?—Yes.

1748. That is, therefore, a specific work to be done for a specific lump sum paid;

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paid; may I ask you, what works have been done with that money?—There were two locks entirely rebuilt, and one partly.

1749. What do you put the expense of those locks at?—About 23,000 *l.*

1750. The two?—Yes.

1751. Has there been anything else done?—Yes, a considerable amount of dredging has been done.

1752. Have you any account of the work which has been done against these sums paid?—No, but you may take it, that is a correct statement.

1753. How much do you say the two locks were?—£23,000, including the half of the other.

1754. Which were those two locks?—Hampton Lock and Teddington Lock were both rebuilt, and Moulsey Lock was partly rebuilt.

Cross-examined by Mr. *Bailey* on behalf of the West Middlesex Waterworks Company.

1755. You have suggested that the embankment of the navigation would affect the supply of the water companies?—Yes.

1756. I also understood you to say that it would affect the quality?—Yes; I think it would.

1757. You have altered your opinion upon that subject, have you not, since you gave evidence before the Select Committee?—I said just now that in the interval between giving my evidence before the Select Committee and giving it before the Commissioners, that I did alter my opinion.

1758. It seems to you that the water companies would be benefited in the way you have mentioned, by a process which seems to travel simultaneously in your mind?—I rather think the travelling has come to an end now; I have pretty well arrived at a conclusion.

1759. There is another point to be considered: suppose that the navigation was altogether abandoned, then it would still be to the interest of the millowners to keep up the weir?—Yes.

1760. In that case, that would throw a dam across the lock?—Yes; I think I said at the same time such a thing could not be permitted to be in existence.

1760*. It might be permitted, if the Committee came to the conclusion that it was desirable to keep up the navigation. In your examination in chief, you were asked this question, "Have you formed any opinion as to the abandonment of the navigation?—Yes. Will you state what your views are on that point?—The abandonment of the navigation would of course be brought about by the failure of the locks; and the miller, in order to keep his mill going, must put a dam at the lock which has given way; the first thing which that does, is to stop the navigable highway." Is it not the case then, that even if the navigation of the river were given up altogether, that the water companies would receive the same benefit, whatever it might be, which they now receive if the water is protected for the interests of the millowners, by continuing the works?—No, I do not think they would be so well off; I am sure they would not be.

1761. They would receive a considerable part of that benefit from the weirs being kept up, would they not?—Yes.

1762. Then, so far, you are conferring no benefit upon them, because the weirs will be kept up by the existing owners?—You are assuming that a state of things will be permitted, which I deny will be permitted.

1763. You estimate that the expense of keeping up the locks is 76,000 *l.*?—Yes.

1764. And that the expense of putting the weirs in repair and maintaining them, would be 2,700 *l.*; therefore, you say it is the weirs alone which benefit the water companies, but because weirs must not be taken to exist without locks, that you are to pay 76,000 *l.* for locks?—I do not think that is a fair conclusion.

1765. You do not say that locks benefit the water companies?—I say that weirs do, and that weirs are an essential part of locks.

1766. That is, essential for navigation?—Yes.

1767. Therefore that benefits the navigation, does it not, and not the water companies?—I do not think it can be contemplated for a moment that in a river like the Thames persons would be allowed to put dams across so as to prevent anything passing.

1768. When

1768. When anything wants to pass you lift up the flush, the water runs level and it passes through?—Yes.

1769. Sir *G. Bowyer.*] Would there be any object in keeping up the water if there were no locks?—The millers would have an object in it.

1770. For the purposes of their mills?—Yes.

1771. Mr. *Bailey.*] Is there not a weir at almost every mill between Oxford and Staines?—At the majority of them there are.

1772. You estimate 76,000 *l.* for locks, and 2,700 *l.* for weirs?—Yes.

1773. Then for the benefit, whatever it may be, which they give the Company, they pay not only 2,700 *l.* for what is done for themselves, but 76,000 *l.* in order that the navigation may be kept up?—I do not think that is a fair way of putting it.

1774. Why is it not?—I contend that a series of dams would never be permitted across a river like the Thames.

1775. Point out to me what benefit we get from the works that you propose; you propose to apply our money for those works; point out to me what benefit you give us in that respect; is it not the fact that 76,000 *l.* which you set aside for locks represents the necessity of the navigation, and not any necessity of ours?—No, I do not think so.

1776. Mr. *Yorke.*] Do I understand you to mean that it never would be permitted to keep up weirs without locks at different intervals along the river, because that would interrupt the navigation?—Yes.

1777. Any weirs that were put up if the locks were allowed to go down would have to extend right across the river?—Yes.

1778. If you were to have weirs and no locks the river would be converted into a series of cascades, would it not?—It would.

1779. Mr. *Bailey.*] Is it not the fact that the locks above Oxford are so connected that you do actually at this moment pass the barges; there are only four locks above Oxford, and you have got two weirs through which the barges have to pass which come down from Lechdale to Oxford; is it not the case that very often the water is left to run nearly level?—Yes; but eventually the stream increases as you get on; it is not of so much importance above Oxford.

1780. It is necessary to contemplate the improvements which are to be effected on the river in order to see what advantages we get from the navigation being continued?—There is another thing connected with that; so long as there is a navigation the interests of those who keep up the navigation is to see that those weirs properly discharge the flood waters, and therefore there is a provision for that as well.

1781. With regard to the expenses arising from looking after the sewage, you said the law expenses were the heaviest item?—Yes.

1782. Do you not think that it would be desirable, in order to avoid those law expenses, that the law should clearly define the duties of the Conservators?—Their duties are now very clearly defined in their own Acts; but it does not prevent them from encountering very heavy law expenses.

1783. But under the Bill which is now brought in there are given powers only, and there are no duties with respect to the sewage; will it not be optional, therefore, to the Conservators whether they will take any steps in respect of sewage?—I am not sufficiently acquainted with the words of the clause to say, but I should think that their duties would be exercised in the same way as they are now.

1784. You have no doubt that if the powers and duties of the Conservators were more clearly defined with respect to sewage, the law expenses would be reduced?—No, I do not know that; their powers are already very clearly defined, but, as I said before, that does not prevent them having to encounter very heavy law expenses.

1785. I see there is this question put to you, "One of the objections that seems apparent on the face of this Bill, is that we do not provide for such a case as Kingston—that is, between Staines and where your jurisdiction commences; we have not taken power to divert from the river existing sewage?—That is the case." The next question is, "So far the Bill is defective, in your judgment, is it not?—It would be a great hardship to require that to be done at once; but supposing the provisions which are in the Bill were applied to your part of the river, after 12 months' notice, where it is reasonable and proper to prevent sewage being poured into the river, do you think that that is an addition

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to your powers that would be very desirable?—The limit is open to some question." Then there is some question about whether the right is a salutary one, and your answer to that is "Yes"?—That is exactly what the water companies want, to have the sewage cut off.

Examined by the *Committee*.

1786. Mr. *Neate*.] With reference to the question which the learned Counsel put, and which I thought exceedingly relevant, assuming that the Thames Commissioners are discharged from all liability to preserve the navigation of the river, you say the millers then would fill up the locks?—I think it is very probable; in fact, the millers would be hampered without they did that.

1787. And they would do it, if they had the power of doing so; they would not take care of the water between their mills and the bed of the river, would they?—No; beyond cutting the weeds, they would not do it, certainly; as the Honourable Member knows, at present there is an enormous growth of weeds in various places.

1788. In consequence of the navigation, the water is kept in a better state than it would be if it were left to the management of the millers?—Yes.

1789. In what respect is it kept in a better state?—It is kept deeper; if there is a navigation passing along, it prevents that growth of weed.

1790. There is dredging done by those interested in the navigation, which would not otherwise be done; therefore it answers the purpose of a reservoir, or more than it would if it were left to the millers?—Yes, much more so.

1791. In that way, then, the water companies do derive some considerable benefit from the navigation works?—I think a very considerable benefit.

1792. Do they also derive a benefit from the control the Commissioners, whose business it is to protect the navigation, exercise, over the millers?—Yes.

1793. What is the quantity of water that goes over Teddington Lock?—The very shortest quantity that I have measured has been 380,000,000 of gallons in the 24 hours.

1794. Has there been any difficulty in dry weather, in the midst of summer, in conducting the navigation, on account of the drain on the river by the water companies?—Not on account of the drain by the water companies.

1795. Have not the water companies been placed, or felt themselves under the necessity of taking less at particular times?—No; I have never heard of that.

1796. Mr. *Peel*.] Do all the water companies draw their supply between Staines and Teddington?—The five water companies.

1797. Do not the 380,000,000 of gallons per day make an appreciable difference in the stream?—No.

1798. Mr. *Acland*.] As far as I understand the drift of the last cross-examination, it was to show that inasmuch as locks are not necessary for the mills, that if the locks are kept up, the cost of keeping up those locks ought to fall upon the navigation, and not on the other interests which are supposed to have some indirect benefit. How do you answer that? I want you to meet it, if you can meet it. What reason is there to throw the expense of keeping up those locks upon any parties except those who are interested in the navigation? You meet that by saying, "Oh, but that is a thing which cannot be allowed." Will you give us your opinion on that matter?—What I said could not be allowed was a series of dams, and nothing else, without any other appliances, to be put across the river.

1799. That is your opinion?—Yes.

1800. What I want you to meet is this: as I understand, the object of the learned counsel is to show that if the locks are to be kept up the people who use the locks for navigation purposes ought to pay for them, and not the water companies?—Yes.

1801. How do you meet that?—I meet it in this way, that the dams are essential to keep the water in the best possible condition, and that the dams could not be permitted without there is a lock to pass the navigation.

1802. That is a question which the Legislature will have to deal with; I want you to show any ground on which there is an equitable claim on other parties than those interested in the navigation for keeping up the locks?—I cannot help thinking that the lock is the essential part of the weir; and the lock and the weir must be treated as one single work.

1803. The

1803. The lock is only wanted on the supposition that the law insists upon boats passing up and down?—Yes.

1804. It is quite conceivable that the navigation may be abandoned as unprofitable and useless; but then the question still remains, why should other interests pay for keeping up works if they are only required for navigation purposes?—The navigation is not necessarily confined to barges; of course, it consists of much else besides; smaller vessels might pass up without detriment to the navigation.

1805. Mr. *Yorke.*] You never contemplated the possibility of its being allowed that the river should be cut into a number of waterfalls, which were impassable to any boat, great or small?—Certainly not.

1806. You exclude that possibility in your answer?—Yes.

1807. Sir *G. Bowyer.*] Have you considered the point of law whether or not a person who erected such an obstruction on the river would be indictable for a nuisance?—I consider that if I went up I should be quite at liberty to cut it away, if I wanted to go up.

1808. He would have his remedy against you?—Yes.

1809. Sir *M. Beach.*] I suppose if nothing was done to improve the navigation, the locks and weirs would go to ruin?—It is generally to the interest of the millers to keep up the weirs; but with regard to those weirs which are the property of the Conservators, of course they would go to ruin.

1810. Mr. *Acland.*] Do I understand your general impression to be this, that you cannot so entirely separate the interests of those connected with the navigation, and of those connected with the supply of water; that you ought not to attempt exactly to define in what respect each party is interested, and therefore, that it is fair upon the whole to take the general indirect benefit to all parties; is that your view?—Yes, that is so.

1811. Sir *G. Bowyer.*] If you took the general interests of all the parties, you would then have to consider what those interests were?—Yes.

1812. Then it would come to the same thing?—Yes.

Cross-examined by Dr. *Adams.*

1813. Have the goodness to look at that map; that is a map published by Mr. Clutterbuck (*handing a map to the Witness*); you were speaking about the Thames running to waste, or running at large, if there were no Conservators to resort to for the purpose of preserving the banks of the river?—Yes.

1814. Just run your eye over those rivers that run into the Thames?—Yes.

1815. I think you find that there are a number of small rivers which unite somewhere about Cricklade?—Yes.

1816. And form what is called the Thames?—Yes.

1817. Then you come on a little further, and come to the Windrush?—Yes.

1818. Is that not nearly as large as the Thames itself at that point?—Yes, it is.

1819. Have you ever heard of any difficulty about maintaining the Windrush without Commissioners?—I do not know the Windrush; I have never heard anything about it, except as being one of the feeders of the Thames.

1820. It is a very large feeder, is it not?—I believe it is.

1821. Now go on to Evenlode; that is a river of considerable importance, which drains a large area?—Yes.

1822. On those two rivers the owners of the land adjoining the river manage their affairs without the intervention of Commissioners, do they not?—I do not know.

1823. You do not know of any Commissioners for that river?—No.

1824. You never heard of any?—No.

1825. Now we come to the Charwell; look at the Charwell; that comes in below Oxford?—The Charwell brings a large quantity of drainage down the river.

1826. And it brings the drainage down; are there any Commissioners for that?—I am not aware that there are.

1827. Now look at the Yorke; that comes in at Abingdon?—Yes.

1828. There are no Commissioners for that?—No.

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1829. Or the Thames?—No.

1830. But if all these affluents of the River Thames are not managed by Commissioners, and yet they still exist, and the millowners do not come to Parliament for special powers to manage these rivers, why should not the millers just as well manage the Thames if there is no navigation?—All these rivers are united in the Thames, and therefore it might be a much more important thing and a much larger thing to deal with.

1831. If the owners of the Windrush can manage their river without the intervention of Commissioners, why should not the owners of the Thames, from the Thames head down to the junction, manage their affairs; and for what reason should Navigation Commissioners be appointed for the one and not for the other?—One is greater than the other.

1832. The Thames and Windrush at that point are of the same size?—At that point they are; but then the Thames is formed by all these streams falling into it.

1833. I represent parties who have a considerable interest on both the Windrush and the Thames at that point?—Yes.

1834. Now, if on the Windrush we can manage our affairs without the intervention of Commissioners, why should we not have the same power on the Thames?—Because the stream is so much larger and more important on the Thames.

1835. But supposing they are the same size?—They cannot be the same size, because the Thames receives the water of all.

1836. I say, above the junction with the Windrush?—Yes.

1837. Supposing that the Thames and the Windrush at that point are the same size, and a riparian owner is on the Thames, according to your view, he is to have a body of Commissioners sitting upon him, who are to tell him what he his to do, and to manage his river for him; but if he happens to be fortunate enough to be on the Windrush, he is to have no interference with him at all?—I do not think that is quite the right view of it.

1838. Captain *Vivian*.] Have not the public a greater interest in the proper management of the Thames than they have in the Windrush?—Yes, that may be the case; the proprietors on that river are all disposed, no doubt, to act properly, but they may make encroachments when they are embanking.

1839. Dr. *Adams*.] What interest have the public in the Thames above New Bridge?—It is a great drain.

1840. That is the owners' interest?—Yes, but the owners may interfere with the power of the stream to pass off the water.

1841. Why do they not on the Windrush?—I do not know that they do not.

1842. Is there any complaint about them?—I am not speaking of any specific complaints, but I have heard that on the stream of the Thames, above Oxford, encroachments are made, and encroachments which are prejudical.

1843. From the junction at the Windrush towards the upper part of the Thames, there is no navigation at all, I think you said?—I believe not.

1844. From Ensham Bridge to New Bridge, do you know whether there is any navigation?—I do not.

1845. Will you take this map which will show it better (*handing a map to the Witness*). That is a map of 1791, showing the river as it was, and the river as it was proposed to be made by the Navigation Commissioners; now, you find by the side of that map a number of works intended to be executed?—Yes.

1846. We have been told by Mr. Castle that those works have only been very partially executed?—I have before stated that I have no local knowledge here.

1847. If you were to make the Thames navigable for all purposes above Oxford, in your judgment would it be necessary very much to increase the works on the different parts of it?—I should think so.

1848. Is there any navigation above Oxford, as far as you know, that would pay anything like a moderate rate of interest upon the cost of the works which you have to execute here?—I believe not.

1849. In your judgment the navigation above Oxford may be considered as abandoned?—I have understood that there is a navigation as far as Ensham.

1850. Between Oxford proper and Ensham Bridge, do you know whether there is any navigation at all now by the main stream?—I believe that there is a little, not much.

1851. Does it not go round by the canal?—I cannot say.

1852. You stated yesterday that you thought it desirable that there should be a control given to the Conservators over the water above Ensham Bridge?—Yes.

1853. Was that for the purpose of the navigation of that district?—No; I think that quite necessary, even if there is no navigation at all.

1854. You would do that if there was no navigation?—Yes.

1855. Would you impose upon the owners of the banks on that part of the river, the duty of keeping up the water to any level that the Conservators of the lower part of the river might have considered necessary for the purpose of navigation below Oxford?—I do not think it would be necessary to impose any conditions as to keeping up the level of the water there.

1856. May I take it that you would not keep up the level of the water there?—I know of no reason why it should be kept up.

1857. If there is no reason why the level of the water is to be kept up, what is to be the control exercised by the Conservators?—The prevention of any embankment or other extension into the river that would affect its power of carrying off the flood water.

1858. Might it not suit your purpose as well if, between Ensham Bridge and Lechlade, there should be drainage areas under the control of an engineer appointed for that purpose, whose duty it would be to use the river both as a receptacle and as a carrier of the drainage of the district?—Such areas might be formed, but I think even then it might be desirable to have a controlling power over them, because it would not follow that they would be acting in accord with one another.

1859. You have heard, I dare say, since you have been in this room that a drainage area is proposed, and is now before the Inclosure Commissioners, between Ensham Bridge and New Bridge, including part of the Windrush?—Yes.

1860. Supposing that that drainage area is completed, what difficulty would there be in the engineer of that district arranging that the height of the water should be such as not to interfere with our rights below?—I think that a controlling power is necessary, exactly in the same way that the Board of Trade exercises a controlling power over any other body.

1861. You are aware that these drainage areas can only be formed by the permission of Parliament?—Yes.

1862. The course of proceeding under the Act of 1861, is for parties to send in an application to the Inclosure Commissioners, who send down a special Commissioner to report on the district?—Yes.

1863. Then it is confirmed by Parliament if the Inclosure Commissioners consider it right?—Yes.

1864. Would it not be possible on the part of the Conservancy, when any such Bill as this was introduced, to get proper clauses put in to protect the water as regards the Conservators?—That would of course be necessary, but I still think that a general control over the whole would be advantageous.

1865. You see that by the present Bill the whole of the Thames, from Lechlade to Staines, is to be handed over?—Yes.

1866. According to your view now, you think that there ought to be different regulations above and below Oxford?—Not different regulations; I say that in my opinion the Conservators ought to have the control over the whole.

1867. Would you give them the same control where there is no navigation as you would where there is navigation?—Yes, with regard to embanking and encroachments on the Thames.

1868. And a power of ordering the embankments to be kept up and banks to be made?—Yes.

1869. You have told us that the Conservancy have power to give the owners of wharfs or banks abutting on the River Thames notice to repair them when they are in a dilapidated state?—Yes.

1870. Would you require to have such a power as that over the river in the upper part above Oxford, where there is no navigation?—I think it would be a very beneficial power.

1871. To do what?—To call upon them to repair their banks.

1872. How are they to repair their banks when there is no navigation?—To preserve the current of the river in a proper direction.

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1873. What does it signify to the Conservancy whether the River Thames goes in one direction or another so long as there is no navigation?—It is of very considerable importance.

1874. How can there be?—I can point out a place on the Thames where the river takes a very broad turn; the tendency of that is to go into a concave bank, and in proportion as the river winds so extensively as that it is less calculated for carrying off flood water; if the owner of the concave part were called upon to repair it to prevent further encroachment it would preserve the current of the river in the proper direction.

1875. That is at a place where there is no traffic upon it?—Yes.

1876. If you get the water ultimately down to the stream where the traffic is, what does it signify to you whether it has passed over one man's property or another's?—I say this, that it is necessary that there should be some power to control the state of the banks and embankments.

1877. What power do you think the Conservators are to have?—The power to call upon the proprietors to repair their banks.

1878. To any extent they please?—It must be to a reasonable extent; it would be useless for the Conservators to call upon the proprietors to do unreasonable works.

1879. Will you show me the clause in the Conservancy Act which gives power to call upon the owners to repair their banks?—It is the 94th section.

1880. That refers to wharves?—Yes; but I think you will find that in the interpretation clause it says that the term "wharf" shall include "land."

Mr. *Phinn.*] The word "wharf" shall include any bank, wall, or building adjoining the river.

1881. Dr. *Adams.*] You think it is essential, if I understand you right, notwithstanding there is no navigation, that still the owners of the banks, that is, the owners of the sides of the river, should be compelled to keep them in what the Conservancy Board would call due repair?—Yes.

1882. And without any application to anybody else?—I do not think the law is ever so peremptory as that.

1883. Where is the appeal then?—I do not know that there is any appeal provided.

Mr. *Phinn.*] It may be convenient that I should refer the Committee to the 161st clause, by which it will be seen that there is an appeal: "If any party shall feel aggrieved by any adjudication or determination of any justice with respect to any penalty or forfeiture under the provisions of this Act, such party may appeal to the General Quarter Sessions; but no such appeal shall be entertained, unless it be made within four months next after the making of such determination or adjudication, nor unless 10 days' notice in writing of such appeal, stating the nature and grounds thereof, be given to the party against whom the appeal shall be brought, nor unless the appellant forthwith after such notice enter into recognisances, with two sufficient sureties, before a justice, conditioned duly to prosecute such appeal, and to abide the order of the Court thereon."

1884. Dr. *Adams.*] I think you told the Select Committee, last year, in answer to Questions 454 and 460, that you should not think of paying out any money without there was a reasonable prospect of getting some traffic; have you satisfied yourself, considering that your estimate has risen from 112,000 *l.* to 150,000 *l.*, and may go still higher, that there is any reasonable amount of traffic to come upon this river which would pay the interest upon the borrowed money?—I have not said so.

1885. You think that there would be none?—I have said that the tolls that would be produced would in all probability pay all the current expenses.

1886. And leave nothing for the bonded debt?—Quite so.

1887. Then the interest upon the money which is to be borrowed must be found from other sources?—Yes.

1888. Your project is to tax the water companies?—Yes.

1889. Alone?—I have no objection to others being taxed.

1890. But you have no project of that sort?—No.

1891. May I take it that the sum that you have mentioned, of 112,000 *l.* or 150,000 *l.*,

150,000 *l.*, or whatever it may be, includes no works above Oxford at all?— No. *S. W. Leach*, Esq. 8 June 1866.

Cross-examined by Mr. *Macnamara*.

1892. Large powers are to be given by this Bill to the Upper Navigation, are there not?—I think the same powers that the Conservators now exercise over their jurisdiction.

1893. And some additional powers with reference to sewage?—Yes.

1894. In the first place, they will have the power of making bye-laws, which shall regulate the whole of the Upper Navigation?—Yes; they have the power to make bye-laws, but those bye-laws have to be approved.

1895. You stated on the last occasion, that you thought an appeal to Her Majesty in Council would be sufficient protection with regard to them?—Yes.

1896. Supposing a large owner or wharfinger, or any person of that kind, should feel himself aggrieved by a bye-law, it would be rather an expensive and troublesome proceeding to appeal to Her Majesty in Council, would it not?—He can be heard before the Conservators.

1897. But supposing the Conservators made the bye-law, it would be an expensive and troublesome proceeding then to appeal to Her Majesty in Council?—Yes, if such an extreme case occurred.

1898. I asked you that question to found this one upon it; do you not think it would be advisable to have persons on the Conservancy Board representing the interests of those who are to be affected by the bye-laws; would not that be better than that there should be an appeal against them?—That is provided by the Bill.

1899. Are you of opinion that it would be the better course to provide for persons being on the Conservancy Board, who should represent the interests of those who would be affected by the bye-laws, so as to watch the framing of the bye-laws in the first instance?—I think that that is provided for; I do not think there is any further provision required with reference to that, than what is contained in the Bill.

1900. Now, let us see what the provision is with regard to sewage; they not only will have power by this Bill over the whole of the Upper Navigation, but also all streams within three miles of the Thames?—Yes, that is proposed.

1901. Those being amongst the important powers which are to be conferred upon them, are you not of opinion that the local authorities of the towns upon the Thames should be represented at the Board?—No, there is not the slightest necessity for that.

1902. Are you, or are you not, of opinion that that is advisable and just?—No.

1903. Perhaps you are aware that there are five Local Boards of Health which are corporate bodies; one at Oxford, one at Wallingford, one at Reading, one at Maidenhead, and one at Windsor?—Yes.

1904. Do you not think that it would be just and reasonable, looking to the interests of the towns which are to be affected, that those Boards should have some voice at this Conservancy Board?—Oh no; certainly not.

1905. Then you do not agree with either Mr. Graham or Mr. Castle in their view upon that subject?—If they have stated that it is desirable, I disagree with them.

1906. Did you hear their evidence?—I heard the greater part of their evidence, but I do not know that I heard that.

1907. Do you agree with this opinion of Mr. Harrison, one of the Commissioners, which is given at page 33 of the Report of the Commissioners appointed to inquire into the best means of preventing the pollution of rivers: "The Conservators have at best a limited interest in the Upper Navigation, and it is important that their activity should not be retarded by any fear of hampering the Lower Navigation with an excessive debt; the chief interest in the maintenance of the Upper Navigation is that of the towns and lands on the banks of the river"; do you agree with that?—I think that is an open question.

1908. Allow me to ask you this: how many of the present Commissioners meet generally at their meetings?—I should think generally 14 or 15 out of the 18.

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1909. Does the representative from the Board of Trade generally attend?—Yes.

1910. Does the representative from the Admiralty generally attend?—I should say almost always.

1911. Who represents the Board of Trade there?—Captain Baker.

1912. Do the representatives from the other special interests, the shipping interest, attend?—Yes.

1913. I am now going to ask you a few questions about the sewage question, with reference to which you have been giving evidence; let us understand, if you please, how this matter stands at present; the Commissioners have no power as to sewage over the Lower Navigation, have they?—They have.

1914. Allow me to call your attention to section 166 of the 20 and 21 Vict. cap. 147, which is the first Conservancy Act: "Nothing in this Act contained shall extend to prejudice, diminish, alter, or take away any of the rights, powers, or authorities with respect to the regulation of sewers, vested in the Commissioners of Sewers within the limits of this Act, or in any person under or by virtue of any Act of Parliament, or to render any person liable to any penalty under this Act for allowing ordinary sewage to flow into the River Thames, but all such rights, powers, and authorities vested in such Commissioners or person shall be as good, valid, and effectual as if this Act had not been passed"?—Yes.

1915. Then I will call your attention to section 79 of the second Act of 1864, which is 27 and 28 Vict. cap. 113: "This Act, or any power conferred by this Act, or any bye-law made or other thing done under any such power shall not—(1), take away, alter, interfere with, abridge, prejudice, or derogate from any right, title, claim, privilege, franchise, exemption, immunity, possession, profit, power, jurisdiction, or authority saved or intended to be saved from or out of the operation of the principal Act by the following sections thereof, namely, sections 51, 52, 80, 164, 166 to 168, and 170 to 179 (all inclusive), or any of them; (2), repeal, alter, or prejudicially affect the same sections or any of them, or any enactment saved or intended to be saved from or out of the operation of the principal Act by the same sections or any of them, or take away or alter any restriction imposed on the Conservators by the same sections or any of them; (3), take away, alter, interfere with, abridge, prejudice, or derogate from any right, title, claim, privilege, franchise, exemption, immunity, possession, profit, power, jurisdiction, or authority saved or intended to be saved from or out of the operation of the principal Act by sections 165 and 169 thereof, or either of them, further or otherwise than is expressly provided by this Act;" so that according to the present state of the law, the Conservators have no power over the sewage of the Upper Navigation?—They have.

1916. Will you point out to me the section which gives them that power?—They can prevent any fresh sewage from being put into the river.

1917. Although they may prevent washings or any other offensive matter being allowed to flow or pass into the River Thames, there is a provision in each Act, is there not, that that shall not apply to the sewage; I am anxious to call the attention of the Committee to the map of the River Thames which is at the end of the Report; I believe the powers exercised by the Metropolitan Board of Works for intercepting the sewage do not extend beyond Putney?—That is so.

1918. Therefore, between Putney and Staines, assuming that I am right in the construction which I put upon these sections, there is no power prohibiting sewage flowing into the Thames?—Yes, I think there is.

1919. Surely, if I am right in my reading of those two sections, there would be no power to prevent sewage flowing into the Thames between Putney and Staines?—I think there is.

1920. Allow me to call your attention again to section 166 of the first Act: "Nothing in this Act contained shall extend to prejudice, diminish, alter, or take away any of the rights, powers, or authorities with respect to the regulation of sewers vested in the Commissioners of Sewers within the limits of this Act, or in any person under or by virtue of any Act of Parliament, or to render any person liable to any penalty under this Act for allowing ordinary sewage to flow into the River Thames"?—I know that the Conservators have prevented sewage from new houses being put into the river.

1921. Reading,

1921. Reading, I think, is about 40 miles beyond where the water companies draw their supply?—Yes, and more.

1922. You propose by this Bill to prohibit the sewage at Reading, which is more than 40 miles from where the water companies receive their supply from, coming into the river, and yet it is not prohibited between Putney and Staines. If this Bill were to pass into law, the Conservators could immediately prevent the pouring of any other drainage into the river from the Upper Navigation, could they not?—Any new drainage.

1923. Supposing no general system of drainage has been carried out in a town where an individual has built a house, what is he to do in that case, supposing he is prohibited from draining where the drains have been accustomed to go?—He must drain like the majority of people do there, into a cesspool.

1924. So that until there is a general scheme of drainage, there would be the necessity of having cesspools?

1925. Do you approve of cesspools as affecting the water to be drawn from wells?—I do not think that that is a necessary consequence at all.

1926. What is not a necessary consequence?—That the water of wells should be polluted by cesspools.

1927. You have read the Report of the Commissioners with regard to the pollution of water?—Yes.

1928. Are you aware that they entertain a different opinion on that point from you?—It depends very much on the locality; with regard to a single house on the banks of the river, it is quite possible to construct a cesspool which shall not interfere with a well the least in the world, but it is very different in a thickly populated town.

1929. We know that originally drainage was by cesspools?—Yes.

1930. Then there being a very strong feeling against that, people have adopted what I suppose may be considered the natural mode of drainage, and so it went into the river?—That is what has been done.

1931. If this Bill were to pass into law, the Conservators could give a notice to discontinue the existing system of drainage in any particular town on the Thames?—I think not immediately.

1932. They could give notice immediately, to take effect within twelve months?—Yes.

1933. I believe the alternative for draining into the river is what is called sewage irrigation?—Yes.

1934. I need scarcely ask you whether there is not considerable difficulty, as well as the considerable expense and time which are required, in carrying out a system of sewage irrigation for a large town?—Yes, it would require some time, no doubt.

1935. Especially in a town like Reading, of 30,000 inhabitants; would you not recommend that the towns on the Thames should have compulsory powers to purchase land for that purpose?—Yes, I suppose that would be necessary.

1936. You are aware that this Bill does not profess to give them any such powers?—No, I believe not.

1937. I see that, in answer to Question 1332, you thought the limit as to time was open to some question, that is, with reference to discontinuing the existing system of sewage; are you not of opinion that in many instances a year would be a very short time to alter the system of sewage to a completely different one in any large town?—In a large town a year would be a short period; it would be a very short time.

1938. Sir *G. Bowyer.*] Do you not think that a town would be able to dispose of its sewage by an agreement with the neighbouring landowners?—I think, in course of time, there would be no difficulty at all about it; the question is making very rapid progress.

1939. I think you will probably say that that will be for the interest of the landowners as well as the towns?—I think so; I think it is a most unjustifiable thing to turn all that amount of filth into the stream.

1940. Are you acquainted with the supply of water to Windsor Castle?—Yes.

1941. Does that depend more or less on there being a proper height of water for the flow of the River Thames?—Yes, it does.

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Further Examined by the *Committee*.

1942. Mr. *Yorke*.] Is not the lock below that in a particularly ruinous state?—It is in a very ruinous state; that is New Windsor lock.

1943. Mr. *Neate*.] In the event of the river above New Bridge being given up to the Corporation under the Drainage Acts, it would be necessary for the Conservators, or whatever Board there might be, to have powers regulating the height of water where the water began, that is, the level of the water?—I think it would be very desirable.

1944. It would be necessary, would it not?—I think it would.

1945. In default of their having some control, they would be very likely exposed to collision between them and the district Boards?—Yes, I think so.

1946. A body which had the control of the weirs above the point where the jurisdiction of the Conservators began, might be tempted to evade the level being kept up by the Conservators by some means or other, might they not?—I think it is very likely that there might be a collision of interests between them.

1947. If it is put under the Drainage Acts, you think it would be desirable that the Conservators should retain some control?—I think so decidedly.

1948. Sir *G. Bowyer*.] I presume that the control to which the preceding question referred, would be rather a negative than a positive control?—I think, generally speaking, it would.

1949. It would be a control, for the purpose of preventing things being done, which might be injurious to the river?—Yes.

1950. What is the mode of proceeding adopted by the Conservators, when they compel a landowner to repair his banks?—I do not think that a case has occurred yet in the upper part of the river, under the Conservators' jurisdiction, where they have called upon an owner to repair; there has been no necessity for it.

1951. It has been more a repair of wharves than a repair of banks, properly so called?—Yes, it had.

1952. Of course you are aware that the landowners are rather alarmed at the great expense which might be thrown upon them by the Conservators, compelling them to execute works for the purpose of repairing the banks of the river?—Yes; it is not to be forgotten that if a bank is allowed to get out of repair, that the material of which it is composed washes out into the river below, and chokes up the channels.

1953. What mode of repair would be adopted in that case?—It would depend very much upon the locality; generally speaking, it is by no means an expensive operation.

1954. How is it usually done where there are no weirs?—I have found that the cheapest and most efficacious way, is by wattling the slopes of the bank.

1955. That is not very expensive?—No; and it makes as sightly a bank as anything.

1956. Have you any idea what the expense of executing such a bank as that is?—It depends on local circumstances.

1957. *Chairman*.] You said, that if the works were properly constructed they would assist the drainage of land?—Yes.

1958. Will you just explain how?—One part of the proper construction of works would be dredging; the side dredging would lower the surface water, and therefore, if there was any water-logged land in the neighbourhood the dredging would give facilities for the drainage of that which did not exist before; it also would assist materially in passing the floods; we have one or two instances where dredging has very materially released the adjoining lands from floods.

1959. Mr. *Neate*.] Referring to what you said about the possibility of diminishing the number of locks, do you know that the larger the number of locks in the upper region the more they increase the facility with which the water gets into the lower region?—Yes.

1960. But it often leads to the formation of shallows, does it not?—No, I do not think it would do that.

1961. Have you not found that in the lower part of the river, where there is

is a greater flow of water than in the upper part, that there are more shallows which interfere with the navigation of the upper part?—Yes, I should always contemplate dredging.

1962. But then it would involve a greater amount of dredging?—Yes.

1963. Would it not facilitate the navigation between Sandford and Abingdon very much if there was another lock?—I think not; if there was dredging carried on in the upper part of that district, it would be by far the best improvement of the two; I should like to see every lock taken away altogether.

1964. Captain *Vivian.*] Dr. Adams has called our attention to the fact that the Windrush is now managed by local proprietors, and he asked you why the Thames should not be placed under similar management; if the navigation was abandoned on the part above Oxford, do you not think that that would be a bad principle to allow any part of the Thames, whether navigable or otherwise, to be left to local control; if the river is under the management of a public body, would not such a system be likely to lead to frequent differences between the two bodies, arising from a direct clashing of interests?—I think so, decidedly.

Cross-examined by Mr. *Sargood.*

1965. I think you were good enough to agree with Mr. Castle, so far as his judgment went, as to the present constitution of the Conservancy Board?—Yes.

1966. I think you were also good enough to give them a good character for their attention to business generally?—I cannot do otherwise.

1967. The only doubt there seemed to be was as to their practical experience of the Upper River Navigation?—Mr. Castle said he did not know enough of it to tell us anything about it; I see your estimate embraces locks, dredging, repairing banks, towing-paths, and so forth?—Yes.

1968. Does not the whole of that practically come under the cognizance of the present Conservators of the Thames?—Yes, it does.

1969. That is, their jurisdiction from Staines downwards embraces for some miles all that could possibly occur on the Upper Navigation proper?—Yes, it does.

1970. I think you also said that, having regard to the mode of constructing bye-laws from the public notice that was given and the opportunity to parties interested of being heard, that you thought that with regard to the question of representation they were properly protected?—Yes.

1971. I wish to call your attention to another provision in the Bill; I see that by clauses 68, 69, and 70, there are provisions for keeping separate accounts, so that the Upper and Lower Navigation does not become merged by any means in the proposals contained in the Bill?—I am aware of that.

1972. Does not that strengthen your notion of the non-necessity of adding to the present number of Commissioners; that inasmuch as the income of the Upper Navigation is carried to a separate account, if there should be any surplus it cannot be diverted to purposes other than those of the Upper Navigation and the parties interested in it?—I stated before that I thought it was quite reasonable that Commissioners should be on the board representing the particular interests of the upper part of the river.

1973. I am not now speaking so much of what is reasonable as what is necessary; I want to hear from you whether you think that the interests of the Upper River Navigation are sufficiently protected in the question of those bye-laws to which we have referred, and the keeping of separate accounts?—I think if the learned Counsel would ask one of the Conservators, his opinion would be worth more than mine.

1974. I will adopt that suggestion; I think you say that the nominees of the public departments are remarkable for their attention to the Conservancy business?—I think all the members attend equally well, except the Lord Mayor.

1975. Sir *G. Bowyer.*] Of course the Lord Mayor has other duties to perform?—Yes.

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1976. Mr. *Sargood.*] Something was said about the representation of the towns; I have not heard it mentioned, but is there to be a contribution asked from them?—No.

Cross-examined by Mr. *Lumley Smith.*

1977. There are no mills on the river, I believe, below Staines?—Only one.

1978. Which is that?—The Abbey Mill River, at Chertsey.

1979. Is that on the Thames?—Not actually on the Thames, but on the banks of one of the streams of the Thames.

1980. How far from the Thames is this mill?—The mill itself, I should think, is not above 300 yards.

1981. Within the limit of three miles?—Yes.

1982. That is the only mill on the Thames below Staines?—Yes.

1983. Is that a paper mill or a flour mill?—A flour mill.

Re-examined by Mr. *Reilly.*

1984. I shall ask you a very few questions indeed in re-examination: I understood you to say that the law would not allow millowners to put a dam entirely across the stream of the Thames, without leaving any passage for boats through it; that was your view, was it not?—Yes.

1985. You look upon the river as a public navigable highway, which it would be a nuisance in the millowner to obstruct?—I think so.

1986. And that whether any such Conservancy Board as is proposed to be constituted exercised any authority over the river or not?—Yes.

1987. That is the view, is it not, which explains your answer to my learned friend, Mr. Bailey?—Yes.

1988. When the expression that a navigation can be abandoned, or may be abandoned, or shall be abandoned, is used, that merely means, does it not, that the navigation as applied to locks and so on, shall be given up?—Yes.

1989. Nothing in an Act of Parliament, for instance, can make a navigation be abandoned by persons who wish to use the navigation?—I suppose not.

1990. Sir *G. Bowyer.*] By abandoning the navigation, I suppose you understand not executing the works, the sole object of which would be to put the navigation in a proper state?—And allowing them to fall into such a state of ruin that they would no longer serve their objects.

1991. Mr. *Reilly.*] Then it is suggested that those who have the benefit of these passages through the Thames should pay for the maintenance of the passages; would they not do so by paying the tolls for the use of the navigation?—Yes.

1992. And your view further is, that with reference to these passages through the dams or weirs, that the millowners would be compelled to maintain them for the purpose of letting off the flood water?—Yes.

1993. So that the withdrawal of the authority from the Conservators would still not relieve the millowners from the necessity of keeping the passages open through the weirs?—Certainly not.

1994. Upon two grounds, that they must allow the navigation to pass up and down, and that they must let the flood waters up and down?—Yes.

1995. Now with regard to the suggestion that this Bill should impose a rate on the riparian proprietors, you stated that that would be very proper if it were practicable?—Yes.

1996. When you said practicable, I suppose you meant that it would be very difficult, and that therefore we must regard it as unpracticable for carrying out such a scheme?—Yes, it would be exceedingly difficult to point out the limits within which the tax ought to be gathered.

1997. Mr. *Acland.*] You are speaking of a rate on land?—Yes.

1998. Mr. *Reilly.*] Perhaps from what you have seen here to-day, you think that a sufficient opposition has been raised to the proposals of the Bill as it stands?—Yes.

1999. Your examination would probably have occupied considerably longer than

than it even has, if we had proposed a rate on the landed proprietors?—I have no doubt of it.

2000. You have been asked further by one of my learned friends, with reference to the clause at the end of the Bill, about the payment of the costs of the Bill; it is the case, is it not, that this Bill is not promoted by the Conservators?—It is not promoted by the Conservators.

2001. It is desirable that that should be understood, is it not?—Yes.

2002. Then you were referred also to section 58 of the Conservancy Act of 1857, and you were asked why that was expressly excepted from the provisions of the Bill, all the other provisions of the Act, speaking generally, being extended to the upper river by the provisions of the Bill, were you not?—Yes.

2003. Will you turn to that section; it was put to you, was it not, that that was a section which regulates the power of the Conservators to grant licenses or permission for forming or erecting buildings, works, and so on, on the banks of the stream?—Yes.

2004. My learned friend put it to you that if that section was left out, all the provisions of the former Act relative to that subject would be nugatory?—Yes, he represented that to be so.

2005. If you look at that Act, can you not tell the Committee, as a matter of fact, which is within your own knowledge, that the object of that section is to regulate the contributions which are to be made to the Crown by the Conservators?—Yes, that is so.

2006. The effect of this Act is, is it not, that whatever income the Conservators derive from dredging in the bed of the river, and from licensing, for erecting buildings and works on the bed or bank of the river, should be divided into three parts, two-thirds of which they retain, and one-third of which they pay over to the Corporation?—Yes, within the fall of the tide.

2007. Is it not the fact that there is a section which gives to the Crown the supervision and control of the pecuniary arrangements of the Conservators on those subjects?—Yes.

2008. Does it not follow that that would be wholly inapplicable to the other part of the river?—Yes, that is quite different.

2009. Accordingly, in connection with the exception of that section, do you find that the other two sections exist, namely, the 103rd and 104th sections of the same Act?—Yes.

2010. Sections 103 and 104 regulate the payment over of that one-third, and the annual account to be delivered to the Crown?—That is so.

2011. Then on the question of the purity of the water, according to this analysis of Dr. Frankland, as given in the Report of the Commissioners, you said, did you not, that you found it difficult to explain the discrepancy in the amounts of the different companies?—Yes, not only in that Return here, but returns which very frequently appear.

2012. Does it appear to you that that discrepancy can be explained in a way which was suggested by one of the Honourable Members of the Committee, namely, that the water has been treated differently by the different companies?—No, I do not think that that would explain the difference.

2013. Is it not the fact that not one of the companies does anything more than pass the water through a sand filter?—Just so.

2014. So that any difference in the chemical condition of the water cannot be explained by any difference of treatment by the different companies?—No.

2015. Sir *G. Bowyer.*] You would say that *à priori* the chemical results of the analysis of the waters of the different water companies ought to be the same?—They ought.

2016. But they are not?—No, they must acquire some foreign matter before they are analysed.

2017. Mr. *Peel.*] You mentioned, with reference to the Conservancy Board, that their income derived within certain limits was divided into thirds, one-third of which is paid to the Crown; what is the amount of the sum paid to the Crown?—I cannot state off-hand; it forms one of the items of the Conservators'

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Accounts, that which is subject to a payment of one-third to the Crown; the whole of their revenue is not subject to that payment.

2018. Sir *G. Bowyer.*] It is suggested that these analyses vary from week to week?—Yes, they do.

2019. Will you explain the answer that you gave with reference to the Act of 1852, when you said that you considered that Act beneficial to the companies themselves?—Because the sources from which they formerly took their supply were so excessively objectionable that it was a matter of necessity that they should go elsewhere; and in point of fact, when they went higher up the river they found that the mere filtration of the water cost them far less than it did before, when their filters were continually becoming choked.

2020. You consider that in proportion to the purity of the water the filtering costs less?—Very much less.

2021. Then I suppose you would say that if by the operation of this Bill the water of the Thames is rendered purer, the companies would effect a saving, because they would require less filtering and the process of filtration would be less expensive than it is now?—No, I do not think that would operate to any very great extent, because really their supply is very good now; it was very different when one company took the water from Waterloo Bridge, and another from Ranelagh Sewer.

2022. Do you not think if the water was purer, that the process of filtering would be less expensive, and that in proportion as the water becomes purer, the process of filtering becomes less expensive?—I do not think that they would find any material difference in this case, because both are really very good.

2023. Do you think if the water was purified, as it would be by preventing all offensive matter being sent in, that it would be good without any filtration?—No.

2024. Do you think filtration would still be necessary?—Yes, especially in flood times; it is then that it is wanted.

2025. Are you acquainted with the water used by the inhabitants of Chelsea?—I have used it occasionally.

2026. Are you aware that there is a general opinion that it is not palatable?—I have not heard that.

2027. Mr. *Reilly.*] My question referred to the Act of 1852, which compelled the water companies to move higher up the river for their source of supply; as I understand, you said that they would have been obliged to do so, but was not an arrangement made at the time in 1852?—Yes.

2028. Can you state, from your own knowledge, that the water companies do not charge at present the maximum of their rate?—No, I cannot state that from my own knowledge.

2029. Do you believe it to be so?—I have heard it is so.

2030. Then these water companies have a monopoly?—Yes, I believe they have.

2031. Mr. *Acland.*] You have stated that it would be to the interest of the owners of the land with regard to the drainage, that the channel should be improved; will you explain how it is that these deep reaches cannot be created without checking the general drainage of the banks; under what powers do you propose to do that?—This is a section of the river below Bell Weir Lock (*producing the same*); this represents a shoal; what I should propose to do with that would be to dredge that shoal.

2032. My question does not relate to dredging?—The summer level of low water is represented by that blue line. (*The Witness here gave an explanation of the section.*)

2033. I presume that the making of an artificial channel above the general level of the valley must impede the outfall, unless there is some special arrangement to carry off the water which does not go into it?—As a principle, it must.

2034. Do you propose to have catch-water drains, or by what process do you propose to relieve the river of that obstruction which those artificial channels must create?—I should not keep the level of the water higher than it has been hitherto; but, when I have had an opportunity of doing it, I have

by

by means of dredging lowered it in the way that is pointed out in this section.

2035. Are you prepared to say then, that, notwithstanding these weirs and locks, the simple operation of dredging the river will give you a beneficial outfall?—Yes, I think it would.

2036. Do you mean that at such a place as Sandford Lock, for instance, where the water is penned up for a mile and a-half, that that creates no obstruction to the outfall?—I do not think it does; the lowering of the water at the tail of the lock would give the opportunity of draining into it better than it does now.

2037. Does your plan for the whole of the basin of the Thames include some arrangement for carrying off the surface water above, which is not required to keep the channel full, by some collateral drain which should really act as a good outfall?—I cannot say I have a definite plan; but that is the general arrangement I should adopt in every case.

2038. Will you explain what you meant by drainage districts, when you spoke of creating drainage districts, in addition to deepening the channel?—I think it was Dr. Adams who referred to that; it is a district which is provided for by an Act of Parliament.

2039. As I understand, all these plans for the improvement of the river tend rather to make deeper water, but do not proivde for carrying off the surface water where it is prejudicial to health or agriculture?—Yes; for instance those works that are required for carrying off the flood water were exceedingly imperfect, and in every case I have looked at I could have suggested plans by which, at no very great expense, some material assistance would be given for carrying off the flood water.

2040. Sir *G. Bowyer.*] Does not the deepening of the river and the maintenance of the river in its proper bed facilitate the drainage of the adjoining land?—Yes.

2041. Therefore, the deepening of the river does assist the operation under the Act of Parliament of these drainage districts?—I have no doubt of it.

2042. Mr. *Acland.*] Are you prepared to say that deepening the channel for a mile and a-half above Sandford helps in any way to carry off the water from Port Meadow?—No, because there are obstructions.

2043. You think it very important, do you not, to carry on this deepening of the channel above Oxford?—I think there are shoals that might be removed very advantageously.

2044. Looking to the large interests connected with the water supply, both for navigation and drinking purposes, you would think it desirable to economize the whole of the water of the Thames above Oxford, and to make the most of it?—Yes.

2045. Do you think that the arguments which are in favour of deepening the Isis above Oxford apply equally to the affluents; that is to say, do you not think it also important to economize the water in the side streams, and to guard them against being abstracted?—Yes.

2046. Is it not desirable, therefore, that if we should embark in any large scheme for improving the basin of the Thames, that those affluents should also be brought under control as well as the main river?—Certainly, with regard to the main stream.

2047. Mr. *Reilly.*] Perhaps I may be allowed to ask a question just to clear up that point; is it not the case that this Bill contains no provision for any specific works whatever?—It contains no such provision.

2048. It is left to the Conservators to exercise the large powers which will be vested in them if the Bill is passed, according to their own estimate, with the aid of future legislation if necessary?—Exactly.

2049. There must be a general survey of the river before you can decide on any specific works?—Yes; or even almost any works.

2050. Is it not also in contemplation that the plan of draining the lands may be adopted which has been adopted in other cases of draining from one higher region down into a lower region by cuts parallel, or diagonal with the stream?—Yes.

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2051. That is the sort of scheme for land drainage which will most probably be adopted?—Yes; which we should facilitate very much by our works.

2052. When you say that that has been in contemplation, do you mean that you have submitted your plan to the Conservators, or that the Conservators have discussed it?—I mean that these works which are in contemplation would admit of such a scheme being carried out.

2053. Colonel *Napier Sturt.*] Has not some such scheme been carried out already?—I do not know.

2054. Do you see any great objection to doing away altogether with the navigation above Oxford?—No, I do not; except for a short length.

2055. Would those drainage works be very expensive?—No.

2056. Mr. *Peel.*] How would the expense be borne?—That would be a matter which would have to be considered; by carrying out this scheme you give the owners an advantage which they have not got now.

Tuesday, 12*th June* 1866.

MEMBERS PRESENT:

Mr. Acland.	Mr. Neate.
Sir Michael Hicks Beach.	Mr. A. W. Peel.
Sir George Bowyer.	Colonel Napier Sturt.
Lord Eustace Cecil.	Captain Vivian.
Mr. Milner Gibson.	Mr. Yorke.

THE RIGHT HON. THOMAS MILNER GIBSON, IN THE CHAIR.

ON the meeting of the Committee, Dr. Adams submitted the following propositions, on behalf of St. John's College, Oxford, which he stated would be satisfactory to his clients if acceded to: "1st. That no expenditure be made on alterations or improvements for the purpose of navigation on the River Thames above the junction of the Oxford Canal with the River Thames at Oxford, except on that arm or branch of the said river which is the channel of communication between the Duke's Lock on the said canal and Eynsham. 12 June 1866.

"2nd. That in case it shall be proposed to form 'Drainage Districts' between Oxford and Lechlade by either of the modes mentioned in the General Drainage Act, 1861, notice of the formation of such drainage areas shall be given to the Conservancy Board, who shall have power to appear and oppose the formation of such districts before the Inclosure Commissioners; and the high-water marks in all reaches of the river included in such districts shall be settled by the engineers of the Conservancy Board and the engineers of the Drainage District; and, in case of difference, by an engineer named by the parties, or by the Chairman of the Quarter Sessions of the county wherein the difference arises.

"3rd. That until such drainage areas shall be formed, the height of the water in all reaches not included in a drainage area shall be fixed by the Conservancy Board; but that, if the riparian owners object to the height of the water so fixed by the Conservancy Board, an engineer shall be nominated by agreement, or in case of difference, by the Inclosure Commissioners, who shall have full power to settle all matters in dispute. That the Conservancy Board shall exercise a general superintendence over the river above Oxford; but if any works be ordered, the riparian owners shall have a like power of appeal to that provided in last clause.

"4th. That the property in the weirs above Oxford, and the right of receiving tolls thereat, remain as at present."

After some discussion, the Chairman stated that the Committee were of opinion that it was premature at present to entertain the proposals.

Mr. *Nathaniel Beardmore*, called; Examined by Mr. *Reilly*. Mr. *N. Beardmore.*

2057. YOU are a Civil Engineer?—Yes.

2058. Have you had experience particularly with reference to navigation works and navigable rivers?—I have had a great deal of experience, and I am consulted a great deal with reference to these subjects.

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2059. Are you the engineer of the River Lea?—Yes.

2060. Is that a stream from whence is taken a considerable part of the water which is supplied to London?—It supplies the New River and the East London Water Companies, which give about one-fourth of the whole of the water of London at present.

2061. These two companies, I understand you to say, supply about one-fourth of the whole of the water supply of London?—I should say, speaking roughly, that their supply amounts to nearly one-fourth of the whole.

2062. Has the constitution of the River Lea trustees lately been altered?—Yes; previously to the year 1850 the two companies drew water but in a very limited form, and the River Lea was greatly neglected; in fact, it was very much in the same state as the Upper Thames is in now; at that time the trustees were incorporated, and with the object of getting money to replace the works generally, and to put the river into a good condition, power was given to them to sell the water.

2063. In 1850 the trustees were incorporated?—Yes.

2064. In 1855 were larger powers given to enable the companies to take an additional supply of water?—Yes.

2065. Have you got the Act which contains those provisions?—I have a copy of it; it was an Act containing very voluminous and very minute arrangements, by which the companies had the power of taking water, and power was given to the trustees to do everything to keep the water in a pure state, and in the greatest amount of volume for the companies.

2066. Did the trustees execute those works?—Yes; the trustees have executed those works; and there was also in that Act a power to the companies whenever they liked, to call upon the trustees to execute any works (not specifying any) that they might think desirable, and within this twelvemonth one of the companies has exercised that power.

2067. That is to say, the trustees were to execute any works which the companies thought desirable in their interest?—Yes; the companies finding the money.

2068. In order to promote the purity of the supply of water?—Yes; the purity and the volume.

2069. Is it your opinion that beneficial results have followed from the execution of those works?—The Act has worked very well; the difficulty was this, that there should be a Conservancy of the river, where large companies like this take water; I suppose there can be no doubt: the question is whether the river should ever be allowed to be put into the hands of the companies themselves; the public feeling, I think, would be that an impartial body exercising their duties wholly judicially, would perform the service best, because you have to deal with innumerable public, and I may say, private interests, and there would be a jealousy of the water companies themselves exercising any such power.

2070. You give those as reasons to the Committee for establishing an impartial control throughout over the stream?—Yes; the great thing is to supply the proper funds for such a Conservancy Board; it is not a cheap thing to keep a river in proper order and under proper control; if you have a Conservancy without funds you will, I think, to some extent, break down; you must have funds.

2071. Have the trustees assisted the water companies among other things by increasing the depth of the water?—Yes, they have increased the depth very largely indeed.

2072. And by protecting the banks from decay?—Yes, every year we improve more and more in that respect; we keep a control over the drainage that comes into the river; at present we have not quite the powers which are sought by the present Bill; but the present Lower Conservancy have, so much so that we have been of late using the powers of the present Thames Conservancy on the portion of the River Lea within three miles of the Thames, with very great advantage to the River Lea; our Conservancy powers are what you may call the ordinary peremptory powers of pulling people up before a magistrate, which were not given us; at that time it was not thought of, but in the Thames Conservancy Bill of some two or three years ago the three-miles clause was put in; the River Lea being a branch of the Thames we have found that clause to be a very great benefit to us.

2073. The

2073. The Trustees of the River Lea are a body constituted by Act of Parliament, are they not?—Yes.

2074. And they have powers in the nature of conservancy powers over the river called the River Lea?—Quite so.

2075. The River Lea runs into the Thames; where?—It runs into the Thames at Blackwall.

2076. Sir *G. Bowyer.*] Have you power to prevent any sewage going into the River Lea?—We have legal powers, and also special powers; but we have not the summary powers which the three-miles clause gives.

2077. Have you got powers which are practically sufficient for the purpose?—Not for local nuisances; the legal power of threatening an action or an injunction, is not nearly so good as the power of summoning before a magistrate, and getting a conviction at once.

2078. You think that power would be desirable?—It is almost necessary; it is not only very desirable, but very necessary.

2079. The other mode is circuitous?—Yes, and very expensive both to the defendant and the plaintiff, and therefore objectionable.

2080. Mr. *Reilly.*] The summary proceeding is beneficial to both parties?—Yes.

2081. If there is any one question to be tried, it is tried in the proceeding before the magistrate?—Yes.

2082. Usually in these Acts there is an appeal to quarter sessions or some other body, is there not?—I believe so.

2083. If there is not there is a power under the general law of having a case stated upon a point of law for the superior court?—Yes.

2084. I understood you to say, with reference to this point, that the Acts relating specifically to the River Lea do not contain stringent enough provisions in order to enable the Trustees to keep out the sewage?—We have legal provisions, and also, in conjunction with the companies, we have the power of making drains to divert our sewage; the companies can call upon us to make drains for many miles up the river; a very large catch-water drain has been made on one side; by using a little compulsion, and so on, we get the drains turned into this drain, so that the sewage shall not affect the water companies.

2085. You are speaking now altogether of sewage, are you not?—Yes.

2086. And not of agricultural drainage?—Agricultural drainage we very materially assist when we have dredged very largely, and in that respect it is a very great help; floods are got off much better; we have rebuilt the weirs and given them a better sectional area; and, what is as important as weirs, we have deepened the river, so that the river does not flood so high, and there is a better vent.

2087. Sir *G. Bowyer.*] Where do your funds come from for these purposes?—The funds of the River Lea are from three sources; they have landed property, some small part of which was used; they have bought up mills for the better management of the navigation, and they have also the water-rents, as they are called, which are contributed by the two companies; one company gives us 1,500 *l.* a-year, and the other 2,000 *l.* a-year, and we have the tolls of the navigation; at the time the Act was passed, in the year 1850, the navigation began to be attacked both by its dreadful state and by the Great Northern and other railways, the consequence of which was that the tolls fell off, and it was predicted by many that the river was going entirely to ruin, so much so that the water companies brought in a Bill to take possession of the river, and become themselves the Conservators of it; but that was opposed, and the result was that in 1855 the companies put the body into better funds, and the trade has now increased very largely indeed, so that the trade at this moment is much larger than it was at the very highest period in the days when the river was a total monopoly, and when there were no railways; I have now described the three sources of the revenue—property, the water companies' income, and the revenue from tolls.

2088. Mr. *Reilly.*] Before we finish the point that was raised about your powers over the sewage, I may ask you this: I understood you to refer to the Conservancy Act, 1864, section 74?—I have no doubt that is it.

2089. I understood you to say, and am I not right, that finding that the

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powers in the River Lea Acts were not sufficiently stringent for all the purposes that you desired, you have supplemented those powers by the aid of that section of the Thames Conservancy Act of 1864?—Yes, when we come within the three miles.

2090. That is to say, that that section gives authority to the Conservators of the Thames to check the flow of offensive matter not only into the Thames, but into any river, and so on, communicating therewith within three miles of the Thames?—Yes; as far as I have seen, that clause works well.

2091. Do you also exercise the same supervision over the state of the water and the river itself?—Yes.

2092. Do you, what is called, "scavenge" the water itself?—We summon people if they throw in things to make a nuisance, and we also get out the dead dogs and things of that kind, which I am sorry to say are very plentiful sometimes at certain seasons.

2093. Does that put you to considerable expense?—Yes; there is a great deal of expense connected with it if it is done properly.

2094. Is it your opinion that the purity and regularity of the supply of water are greatly promoted by keeping up regular high levels of water in the stream? There is no doubt of it, and especially as applicable to the Thames, more so than the River Lea, inasmuch as it is a much larger river, and you have a much greater capability of doing it by ponds, very much larger.

2095. Now, to go to the subject of water mills; do you find from your experience that the power of water mills may be greatly improved by being put under proper control, and that in effect a proper system of control over the driving down of the water is really beneficial to the millowners themselves?—Certainly; down to a certain limit; I think that mills now-a-days with a very small fall, such as from one foot to two feet six, are scarcely worth maintaining; a good river engineer would endeavour to alter his river so as to do away with those small falls; I speak, for instance, of the fall between Oxford and Sandford mill; there is a mill there, which would be very much better done away with.

2096. Is that the mill called Iffley Mill?—Yes; it would be a very good thing if you were to dredge back, and the level of Sandford Mill were brought back to Oxford, and a lock made there upon an upper navigation.

2097. That is one kind of improvement which you would suggest for the Conservators to adopt, if they get the powers of this Bill?—Those are improvements; it must be a matter of careful study if this Bill should pass, after they become possessed of their property; just like any other property, it ought to be carefully surveyed, and further works considered; but, as a general principle, you may improve the mills, and improve the power of passing off the flood, and generally improve the water by a judicious plan; with regard to mills which worked upon the old-fashioned system, they had a low wheel adapted to work in floods; these low wheels are now becoming universally abandoned; they are wasteful of water, and with a proper conservancy the water would be kept up to the head of oscillation, and instead of being one or two feet, as I have known, it would not be more than six inches; the miller would have a steady power, and his power would be improved from 35 per cent. up to 60 or 70 per cent.

2098. By the term "low wheels," do you mean to describe what are sometimes described as undershot wheels?—Yes.

2099. Do you suggest, then, that by an improved construction of the wheels at mills, the water power might be greatly economised?—The water power is economised; the river is kept up and kept deeper, and the navigation goes on; but at the same time, by deepening the river and dredging it, and putting proper works in, it can pass off the floods better, and prevent the water rising, by a very great deal, so high as before.

2100. Sir *G. Bowyer.*] You do not recommend overshot wheels, do you?—There are no locks on the Thames sufficient for overshot wheels; generally speaking the fall is a low breast; sometimes it is a high breast.

2101. Mr. *Reilly.*] In some cases turbines might be substituted?—Turbines appear to have been; they are more economical of the water power; but the working of turbines more than ever requires the water to be kept up at a good steady head.

2102. So that if arrangements were made by which the millowner would be secured a continual deep catch, that would be more beneficial for him in the long run than the arbitrary power which he is supposed now to have of drawing down the water at his own pleasure?—Yes; and more especially with reference to dredging; he would also have the advantage of not being tailed so often as he is now; as the water rises back on the wheel, the miller's fall is destroyed; he loses his power, and then sometimes he cannot turn his wheel for a week together.

2103. Have you examined the Thames generally yourself?—I had examined some portions previously, and other portions I was asked to examine with Mr. Leach; above Oxford I have not looked at.

2104. Speaking from your special knowledge of the Thames, and your general experience of the navigation of the river, will you state to the Committee whether, in your opinion, all the different interests concerned in the stream may be reconciled?—Certainly.

2105. That is the interests, we will say, of the navigation, the interests of the millowners, and the interests of the land drainage especially?—Yes; the land drainage question, which any conservancy which is devised properly, such as an engineer would understand, would not think of raising the water higher; in fact, I doubt whether any pond in the Thames could be raised higher; no one would think of such a thing; anything he would do, would be merely to maintain the present level, and to dredge and improve the weirs; all those things may be done with advantage to all interests; if there are drainage districts which wish to come into the Thames, there is nothing, I conceive, which can be done to hurt, but a great deal may be done to benefit. For instance, supposing any district is forming a scheme to drain into the Thames, and they either look to the present outlet or a new outlet, they of course will naturally take the point where the Thames is low with regard to the surrounding land. If you improve the Thames and get the floods off, and dredge it, you improve the point of outfall, although you may have nothing to do legally or pecuniarily with the outfall of the district itself.

2106. So that even if the Conservators will not undertake any system of land drainage on their own responsibility, that will facilitate the operations of the riparian land owners for drainage purposes?—With a well devised plan they can only facilitate.

2107. Is it your opinion generally, that it is of urgent importance that the Thames should be put under the control of some one responsible body?—I think, and have thought for some years, that it must come to that; it is not a new subject with me, for I have known well for several years past that the thing was getting from bad to worse, and it must be put into one hand, I should say.

2108. And, particularly, with reference to the question of the management of the river above Oxford, are you of opinion that it would be very undesirable to constitute any new conflicting authority in that part?—The inconvenience of conflicting authorities is this, that each drainage district will do the best it can for itself; but I think they would not find it to be their interest to do any thing to the main river itself; you must have one authority for your arterial drainage; that would be the judgment I should form; if it should be the judgment of Parliament to put the whole country, the whole valley, and the whole marsh above Oxford into one great drainage district, I can understand that there will be only the public in that respect, but having reference to the objects of keeping the river a pure river, and having a proper control, I say, as a matter of conservancy generally, the thing may be done with advantage to any of the drainage districts on either side of the Thames.

2109. Sir *G. Bowyer.*] Do you think that the operations of the Conservators do not interfere with the drainage?—No; we have the same thing precisely on the Thames under the present Conservators; I have some 15,000 acres which I am engineer to below London, where the marshes and the banks are under the Commissioners of Sewers, but we drain into the Thames, and the two bodies do not interfere.

2110. Have you not known instances where the powers of the Conservators have, in point of fact, very much impeded the formation of drainage districts, and the working of such districts?—No, I know of none.

2111. Do you think the authorities, whoever they may be, who manage the

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river would interfere with the formation of drainage districts?—I take it that an independent Board, liable to the control of the public, with a public revenue, making returns to Parliament of their proceedings, would act like sensible men, and in that respect I should apprehend that nothing of the kind could happen; I can conceive of nothing of the kind; but if they have no funds, and the weirs belong to one party, and the river to another, and the banks to a third, there is a difficulty, and always must be.

2112. Mr. *Reilly.*] At any rate, you are acquainted with the provisions of the Land Drainage Act of 1861?—I know generally the Act you mean; it gives power to form drainage districts; it is very much applying the old system of Commissions of Sewage from the Lord Chancellor.

2113. It is not suggested, is it, that there is any absolute prohibition against the formation of a drainage district where there is a Conservancy Board?—It ought not to be.

2114. It is merely provided, is it not, that drainage districts shall not be formed without some reference to those Commissioners or Conservators?—It is; if an outfall is going to be made it would be manifestly injurious, and I take it it would be objected to, and most probably that would be a beneficial control, because I have never known those matters the worse for discussion.

2115. The provision of the Act is that nothing in this Act contained shall authorise the Conservators or any drainage Board, and so on, to interfere with any river, and so on (it is a very long section), without the consent of the Corporation, Company, Commissioners, Conservators, and so on; such consent to be expressed in writing?—It is just the same with the Lower Thames; if we want to make a new sluice into the Thames we have to apply to the Commissioners; they have the thing carefully inquired into, and if the Commissioners have any suggestion to make, it is made, considered, and discussed; I have always found them just the same with any encroachment on the river; upon the whole length of the Thames you can make no pier or wharf without applying to the Board; the Board have certain rules, and they exercise them, according to my experience, and I have seen a good deal of it, judiciously and for the public benefit; they have no other interest.

2116. To revert to the question, with reference to the river above Oxford; does it not appear to you that the interests of the river above and below Oxford cannot be regarded as conflicting or separate?—No; especially in relation to the fact that very probably there may be some scheme for reservoirs.

2117. Storeage reservoirs, do you mean, for improving the supply down the river?—Yes; partly for improving it, and holding back the clean water while flashes are going on.

2118. Can you give an illustration how the river above Oxford would be affected by navigation works below Oxford by referring to the reach down to Sandford Mill?—To get a good drainage from Oxford to the reach below Oxford, it should be dredged back, and the locks should be made at Oxford; the weirs should be very much increased and improved, and then as you stop up the course of the river, it should be brought into train therewith according to some fixed plan; I think it would only be imitating the present evils to attempt to make two jurisdictions.

2119. Captain *Vivian.*] Would not that be injurious to boating?—No, it would rather improve it.

2120. Would not doing away with Sandford Lock be injurious to boating?—I should not advise Sandford Lock to be done away with; what I suggested should be done away with was Iffley Lock; there ought to be an immense deal of dredging done between Sandford Lock and Oxford; it ought to be all formed into one fine river, and then a small lock put at Oxford.

2121. Mr. *Reilly.*] That would be greatly to the interest of boating, would it not?—Yes.

2122. Colonel *Napier Sturt.*] Are there any weirs between Sandford Lock and Oxford?—Two small weirs; there are Iffley Mill and the paper mills.

2123. Mr. *Reilly.*] Is it not a fact within your knowledge, that notwithstanding there is Iffley Lock between Sandford Lock and Oxford, the existence of Sandford Lock turns the water back on Oxford?—My opinion is, that the river wants dredging from Sandford to Oxford, and that the weir at Sandford Mill is not above half the size it ought to be; when a flood comes on neither the river nor the weir will take away the water; I see it in evidence, and I have no doubt myself from what

what I can see, that there is always a fall at Sandford Mill; if there is a fall, if you have a good river to take away the water, and a good river to bring it, and a good weir to pass it through, the mill itself is no harm.

2124. That Sandford Weir would, of course, be under the control of the Conservators, even if their jurisdictions stopped at Oxford, as proposed?—Yes, but the traffic cannot pass Oxford itself; looking at it as a navigation question, the idea of a flash being only open twice a week for the passage of barges is an absurdity.

2125. You have stated to the Committee in effect, that the improvement of Sandford Weir would be beneficial to Oxford?—Yes.

2126. Is not that an instance showing the unity of interest in all respects of the river?—Yes; you have the same idea precisely at Oxford itself; you want the river improved above Oxford, and you want a proper weir or weirs at Oxford.

2127. In short, is it your opinion that the drainage of the city of Oxford, either with regard to sewage or with regard to the flood water, can be effectually worked out without improvements at Sandford Weir?—They cannot without improvements at Sandford Weir.

2128. Then those improvements would be improvements in the part of the river under the jurisdiction of the Conservators?—Yes.

2129. Even if the narrowest proposal were adopted?—Yes.

2130. Now you said that all the interests of the river may be reconciled; I omitted one interest in specifying them, and that is the interests of the water-drinkers of London; you are of opinion that their interests also are involved in having a comprehensive scheme?—Certainly, I think if something is not done that the water companies themselves will be advised to do it, and they will have to do it.

2131. You think that perhaps they will have the strongest interests of all?—I think so.

2132. Do you think, under those circumstances, it is reasonable that they should contribute to the maintenance of the river?—I think it is reasonable, but I think it is a matter also of self-interest.

2133. Of course the water revenues in London are very large?—They are very large, and are very much increasing.

2134. And a contribution or a very light tax on the water companies would bring in a very considerable sum to the Conservators; is that so?—Yes; but I can hardly hold that it would be a tax on the companies; the companies are merely trustees for the public deriving a certain amount of revenue, and if the companies treat their concerns in any other light the public are sure to be dissatisfied; if the revenue which is to be got from the present rates will afford a good return for the capital expended, and will afford to pay for the cleansing of the river, and the proper maintenance of the river, it is self-interest.

2135. It is not necessary perhaps, then, to use the obnoxious term "tax," but you think a contribution from them might be fairly adjusted, so as to bring a considerable revenue to the Conservators, and yet not be a burden to them?—From what I have seen on the River Lea it has worked well; it has worked well there; it was thought at first we were a little exorbitant in our demands, but it is very well known with regard to the River Lea, and those two companies, that the revenues have amply borne the second tax.

2136. Mr. *Acland.*] You mean the revenue of the companies?—Yes.

2137. Captain *Vivian.*] Which are those two companies?—The East London and the New River Companies; the East London supply the whole of the suburban district from Walthamstow on the north-east, from the Victoria Park district on the south, up to the City; and on the north-west as far as Tottenham; at that point the New River begins; and the New River supplies Hornsey, Highgate, and just down to Charing Cross.

2138. How many gallons of water do the two companies draw per day?—I cannot tell you exactly, but it must approach in summer time to 35,000,000, that is, the two companies.

2139. Mr. *Peel.*] Do you charge them for the water they take?—The first arrangement was made *pro ratâ*, but in 1855 the arrangement was altered, and it became a fixed sum of money, the water being divided between the companies and the River Lea in certain proportions; then arrangements were made that

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the companies could, by tendering the money to the trustees, put up engines, so as to have a further supply; it was a very complicated arrangement, but, practically, the whole of the water of the River Lea was divided into three portions, one portion to each company, and a small portion for the trustees.

2140. Then it came to this, that you charged so much for the water that they took?—Yes.

2141. Captain *Vivian.*] And the river is quite able to give a supply under any circumstances?—Yes; but the demand increases so much that the River Lea will, within a short period, quite come up to its maximum; the companies are making very large reservoirs to secure a better supply; the difficulty in all these rivers, I may remark, is the question of flood; the sooner you can get the floods off, and the less, by preserving the banks, you allow the banks to break away and foul the water, and make it clayey, the better it is for the companies, because the companies in a thick high flood cannot filter.

2142. Mr. *Reilly.*] Have you analysed the returns of the gross revenue of the water companies of London?—Yes.

2143. Can you state what is the gross revenue per 1,000 gallons?—I made a calculation of the earnings of the companies, and taking the London Companies in a lump, they earn in revenue about 4·87 *d.* per 1,000 gallons, or nearly 5 *d* per 1,000 gallons.

2144. Their actual receipts?—Yes.

2145. All the companies in London together?—Yes.

2146. Not merely the five which draw their supply from the Thames?—No; taking the New River and the East London as well, the whole gross receipts, and the whole quantity to be supplied, it comes to 4·87 *d.* per thousand gallons.

2147. What do you calculate will be the cost of pumping and filtering 1,000 gallons?—I have only the means of knowing by the expenses returned by all the companies; the expenses of delivering the water come to 1·91 *d.* per 1,000 gallons.

2148. That includes pumping, filtering, and distributing?—It includes all expenses except such as come out of capital; that is, laying pipes and so on—all the current expenses.

2149. Excluding the capital charges?—Yes.

2150. And that leaves a profit of how much?—2·96 *d.*, or nearly 3 *d.*, which has to pay the capital expended; that 3 *d.* has to pay the interest on capital expended.

2151. Of course a considerable part of the water supply of London is given not merely to individual consumers in their houses for domestic purposes, but also for trade purposes?—Yes, the demand for trade purposes has very much increased of late years; the railway companies take a great deal; there is a great increase in the number of steam engines, and the use of small engines has very largely increased, and the number of factories generally has increased.

2152. You think the consumption for trade purposes has increased even more rapidly than the consumption for domestic purposes within the last 15 years?—I believe so; I believe it is considered generally that the trade demands have been much larger than it was expected, partly from the general increased use of steam-engines; everybody must have a steam-engine stuck up now, which has to be supplied with water, and all these small sums make a very large revenue.

2153. That is a profitable kind of supply to the companies?—Yes, it is done by meter; in the last 10 or 15 years meters have been introduced; up to about 15 years ago there was scarcely any measure of water at all, but water is now supplied by measure.

2154. Has the rate of dividend been kept up by the older companies during the last 15 years?—I believe so; I cannot speak positively, because I am not a holder of stock; I believe that the dividends have all been kept up, and not only that, but they have issued new capital, and paid the same dividend on the new capital.

2155. They are obliged to make returns, are they not?—They are.

2156. Therefore it is a matter, to some extent, of public notoriety?—I know that a great deal of new stock has been placed, and that the new stock receives the same dividend as the old.

2157. It is a matter of public notoriety to some extent what is capital, and what

what are the profits of any given company?—Yes; I may state that there are exceptions. I am not sure that one or two of the companies did not feel very heavily the outlay involved under the Act of 1852, in filtering and removing their establishments up to Thames Ditton; I think the Chelsea Company felt it for two or three years, but as a whole, the companies had, as I should say, a new lease of their concerns, and were, I think, in a better position than they were 15 years ago.

2158. That Act was passed in 1852; how soon were the works completed for shifting their source of supply?—I think about 1856.

2159. There have been 10 years, at any rate, since those works have been completed?—Yes.

2160. You think the dividends have recovered?—Generally speaking, they are all better off; I do not say that the dividends are actually better, but the larger dividend has a dividend paid upon it.

2161. Have you prepared for the Committee a table showing approximately the amount of capital expended by the companies?—I took a table out from Mr. Bateman's pamphlet; I had occasion some time ago to test it as well as I could, and in general terms I believe that statement to be correct (*the Witness handed in the same*). That increase is not due to the domestic supply altogether, but a great deal of it is due to the trade supply.

2162. That supply is to the two companies who draw from the River Lea?—That takes in all the companies; it was not in my power to divide the five Thames companies from the others.

2163. Have you prepared also a table showing the progressive revenue of the companies, and the proportion of working charges, and the surplus left for dividends?—Yes; that I have prepared from Mr. Bateman's pamphlet, and I believe it to be correct.

2164. Have you a copy of it?—Yes. (*The Witness delivered in the same.*)

2165. Is it, in fact, contained in Mr. Bateman's pamphlet?—Yes, it is extracted from Mr. Bateman's pamphlet; Mr. Bateman professes to take it from the returns given according to law to the City of London; I have not seen it challenged.

2166. Is that at page 38 of Mr. Bateman's pamphlet?—The table I have put in is compiled from the table at page 28 of Mr. Bateman's pamphlet.

2167. Have you considered how much a contribution from the companies, calculated on the basis of one-eighth of a penny per 1,000 gallons, would amount to from the five companies in a year?—I think you will find one-eighth of a penny is very much larger than the calculation put in by Mr. Leach.

2168. Mr. *Phinn.*] I think Mr. Leach stated 9,000*l.* a-year?—Mr. Leach said 10*s.* per million gallons; Mr. Leach's calculation is one-twelfth of a penny per thousand gallons; that calculation was 9,000*l.*, and you say it would be as eight is to 12.

2169. At Question 1569, page 77 of the Minutes, Mr. Leach rather corrected himself, and he gave it then as 8,420*l.*?—Yes; you will see that is 10*s.* per million gallons; I think 10*s.* per million gallons is one-twelfth of a penny per thousand gallons.

2170. Mr. *Reilly.*] Do you think it would be desirable that any contribution made by the water companies should be not altogether governed by the annual expenses?—I think the companies have a very strong annual interest in conservancy, of a chronic character; I think that is a good deal distinct from the necessary works to set the river in a proper condition; from seeing the thing practically, I know that if you starve the Conservators you are liable to have the thing not carried out so well.

2171. Is that the kind of arrangement made in the case of the River Lea?—Yes, there was capital contributed there as well as income, and the arrangement is still made that the companies can call upon us to do any works by contributing the cost at once; the New River Company have spent 6,000*l.* this year in one work by the hands of the trustees; under the arrangement the companies can call upon the trustees to execute any work which they may think beneficial.

2172. They either guarantee or provide the funds for that purpose?—Under their arrangement the funds are to be provided, but in this case I speak with some hesitation, because it is manifest the exact way of dealing with the Thames is not yet fixed upon; the first duty of the Conservancy will be to have a survey

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made, and fix a defined course of action with regard to the new works; then, when that is done, it will be necessary to consider how the money is to be raised for those works; what I mean is this, that whatever money is raised my own impression is that the money will be raised better if you have one contribution for capital, and one contribution for the current expenses of the Conservancy; for instance, suppose the money were lent by the Public Works Loan Commissioners, they would say you have 7,000 *l.* or 8,000 *l.* a-year contributed by the companies, how much will your river cost you to maintain; how much surplus shall we get out of that money?

2173. Colonel *Napier Sturt.*] Have you at all calculated the income that would be required to keep the river in good working order from Staines to Oxford?—No, I cannot speak positively, because so much depends on how much you spend in capital in renewing works.

2174. What will it be if they are once put in order?—If they are once put in order it is a very small affair.

2175. What do you call a very small affair?—I should think, perhaps, the whole expense from Staines to Oxford need not be more than from 5,000 *l.* to 8,000 *l.* a year, taking the whole thing liberally, to maintain it after the works are put in order; but if you left it with the works tumbling down, and half do it by patching up and leaving one-half tumbling down, it would be very small.

2176. Can you tell the Committee what it would cost to put the river in order between Staines and Oxford?—I have not entered into any proper estimate of that; I think Mr. Leach's figures, as a preliminary, would do, but I do not think Mr. Leach himself has perfect information; there has not been any survey made of the weirs belonging to the different people; of course, it is taking a good deal of liability to take these weirs; we do not know the condition of them all.

2177. Mr. *Reilly.*] You concur with Mr. Leach in thinking that a preliminary survey of the whole river must be entered upon and completed before any plan can be carried out?—Yes.

2178. When the preliminary survey had been completed and the Commissioners had framed their scheme, might they not publish it, and give an opportunity to everyone interested to be heard upon it?—Yes.

2179. In the same manner as they are bound by law to publish the bye-laws which they make, and to submit them to discussion?—Yes; and also with regard to erections in the river, such as piers and moorings, and so on, I believe they are subject to public discussion before they are allowed.

2180. There is a provision in the Conservancy Act, is there not, enabling persons to have a sort of public hearing before the Conservancy, sitting as a kind of court, if any person thinks himself aggrieved by the order or proceeding of the Conservators?—Yes, I know there is; for instance, with regard to what is called the derrick, or unloading machine, down below, the position of one of them has been shifted in consequence of objections made by the public.

2181. Is it your opinion that the traffic on the Thames might be considerably increased if the navigation were put into proper order?—I have no doubt that the traffic will increase.

2182. Has that been your experience on the River Lea?—Yes; the traffic there has very greatly increased, indeed; in fact it was doubted, as I said before, whether the thing would not all come to ruin, and the whole of the traffic go, but now we have got as fine a trust as can be, and are rising every year; but unless the means for the traffic be brought more in harmony with modern times, it is impossible to expect traffic; for instance, at Oxford the traffic is limited to two days in the week; there is a flash by which the barges are compelled to wait two days in the week; I see from the evidence that if the boats or barges have not the good luck to get there on the Friday they have to wait till the Tuesday; now, according to a great deal of experience I have had in traffic of this kind, it is quite impossible to maintain traffic at all under those conditions.

2183. Sir *G. Bowyer.*] Where is that?—That is at Oxford itself, and very near to a point where there ought to be a very large traffic, for it is the point that divides the Oxford Canal from the Thames.

2184. At what part of Oxford is that?—At the bridge.

2185. Which bridge?—Alderman Towell's Mill.

2186. Mr. *Reilly.*] That system of flashing affects the whole of the navigation

tion of the upper part of the river, does it not?—I do not know with regard to that part, but a flash navigation is altogether out of the question, and if the navigation is to be maintained above Oxford, the flashing must be done away with.

2187. That is quite antiquated?—Yes.

Mr. *Phinn.*] The Committee will find some evidence upon that at page 51, beginning with Question 1556.

The *Witness.*] I was also going to remark, that you must carry heavier freights now-a-days, to be able to compete with advantage with railways; the shoals and shallows of the locks on the Thames quite preclude heavy freights, and in flood time make it necessary to have a great access of horse power to draw the barges; in the last 10 years, to quote the River Lea, we have increased the tonnage from 45 to 80 tons each barge; that has had an immense effect on the facilities of the navigation, and cheapening the traffic by water.

2188. Mr. *Reilly.*] By dredging and removing shallows, and so on?—Yes, and improving locks.

2189. In fact, the river navigation now holds its own against the competition of the railways?—Yes.

2190. How many railways are there in direct competition with the River Lea?—Four.

2191. Sir *M. H. Beach.*] What is the depth of water with respect to navigation that you have in the River Lea?—The minimum of a great portion of it is six feet; a short portion of the Lea is not yet completed; we have increased the loads as I have stated from 45 tons up to 80 tons, but still we have not very often more than six feet.

2192. Colonel *Napier Sturt.*] It is a deep river naturally, is it not?—No.

2193. From where does this navigation go?—From Hertford to London, with a branch to Stortford and Cambridge, running up parallel with the Stortford navigation up to Stortford; the Stort branch is near Broxbourne station.

2194. What sort of merchandize does the barges principally carry?—Coals, grain, seed, malt, timber, sand, breeze for brick making, upwards and downwards, malt, bricks, and country timber.

2195. Water carriage is very good for fragile articles, is it not?—Yes, but there is not much of that; coals and goods are carried on the Lea; there ought to be a good deal carried on the Thames out of Oxfordshire.

2196. Great improvements in your river have been made since 1855, have they not?—Yes.

2197. Since your arrangement was made with the water companies, who supplied you with the funds?—Yes; we began in 1851, and we have done more since 1855.

2198. In fact, the traffic has risen up to a point greater than it had reached before the times of railway competition?—As far as burden goes we carry a much larger burden, but our tolls are less; the tolls are not much more than half what they were.

2199. Sir *G. Bowyer.*] Does your river compete successfully with railways?—I might answer that question by saying that it does not compete with railways.

2200. You have no railway competition?—No; we have four railways; I think they take everything they can from the river; my own theory is, that when people can go on a rail they will never go on a river; but a river can do much traffic and much more conveniently than a rail; that it has its own special uses; and if you give reasonable facilities the river will have it; but, unfortunately, at present, even the mills on them, as I understand, send everything by rail, they put nothing on the river.

2201. Do you not consider that what is described is, in point of fact, competing with the railways? It is a competition with the railways, because if there was no river of course everything would go by rail?—Because the navigation is not in a complete state.

2202. You do not consider that the Great Northern compete with you, do you?—Yes; the River Lea carried coals for the whole district of 30 miles out

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of London that are now supplied by the Great Northern; I think the year they opened, the Great Northern took 30,000 tons of the coal off the River Lea.

2203. Mr. *Neate.*] Do you bring much hay to London?—Not on the Lea; the road competes with regard to hay; the carter finds his hay in London in the carts; and he is able to take it to the buyer, and the buyer supplies him with dung.

2204. *Chairman.*] Do the water companies pay for the quantity of water they take from the Lea a fixed annual payment?—It is a fixed annual payment, but the first arrangement in the year 1850 was by a *pro ratâ* payment; we found it inconvenient with regard to raising money, and so it was made a fixed sum.

2205. Mr. *Reilly.*] Can you give the Committee the figures of the present tonnage carried on the river?—About 350,000 tons.

2206. What was the amount carried in 1855, before your great improvements?—It had then dropped to about 170,000.

2207. But the tolls are greatly reduced?—No, I spoke of the tolls; I said that the tonnage was larger than had ever been known; but I said taht the revenue was not larger, because in the old days, when the river had a monopoly, the tolls were about double the present revenue, so that, after this improved navigation, we have given the country the benefit of reduced tolls; the barges carry double the burden, at half price.

2208. I suppose you consider that the river is in splendid order?—It is in good order.

2209. And that the public have had all the benefit of improving the navigation?—Yes.

2210. They have had increased accommodation at lower tolls?—Yes.

2211. The works which you make at the suggestion or request of the water companies are of course also beneficial to the navigation?—Hitherto all the works have been; but I apprehend that they might call upon us to do works, such as lowering a pond, that might incidentally do no harm to the navigation and might benefit the land.

2212. And it might be indifferent to the navigation?—Yes.

2213. Of course the trustees would do no works that would injure the navigation; but, in point of fact, have many of the works that have been required by the water companies to be done by the trustees been beneficial to the navigation?—Yes; the works generally have been beneficial, the last work which was done during the last year was the deepening of a lock and the lowering of a pond, which was beneficial to all the interests; we had a new lock by means of it, and a deeper lock.

2214. That may be taken as an illustration of the unity of the two interests?—Yes.

Examined by the *Committee.*

2215. Lord *Eustace Cecil.*] What is the length of the Lea, and the cost of keeping it up at the present moment?—The Lea proper is about 27 miles.

2216. What is the cost of keeping it up in its present state?—The total cost varies from 8,000 *l.* to 9,000 *l.* a year, but that includes salaries and a good number of rents, such as old lock rents, land rents, and so on; they were old weirs, which we hardly know where they exist now, that were bought up by a rent-charge, and now we are subject to rates and taxes.

2217. £.8,000 or 9,000 *l.* a year?—Yes.

2218. Twenty-seven miles in length?—Yes; but we maintain the navigation in a high state of efficiency, and it increases with the increase of traffic; the lower part of the river is very expensive to maintain; we have a very large number of sluices, and we are exposed a great deal to refuse from London, and so on; we have to incur a great deal of expense; that is below where the companies take their water.

2219. I think, if I heard you correctly, you put the whole cost of keeping up the Thames between Staines and Oxford at 8,000*l.* or 9,000*l.* a year; can you explain that?—I said from 5,000*l.* to 8,000*l.* a year; there would be no railway charges to pay; there are much fewer locks on the Thames than there are on the Lea, where there are a great number of locks.

2220. You do not include the salaries of the officials in any way?—I should think from 5,000 *l.* to 8,000 *l.* a year ought to pay for the salaries.

2221. Mr. *Peel.*] With the same conditions of charge which you have estimated for the River Lea, what would you put the whole charge of maintaining the River Thames from Staines to Oxford at?—I take much the same rate of charge; but the River Lea is very much heavier, and the lower portion of our traffic is very much larger; the River Lea at a certain point is more like a sort of dock out of the Thames; the charges there are very excessive indeed; in fact, it is very much the same parallel as if, supposing this scheme were carried out, you take the charges of the Thames Conservators for the upper part; of course at present the charges with regard to the upper part are comparatively small.

2222. Sir *M. H. Beach.*] How many locks are there on the Lea?—We have reduced the number from 28 to 18 or 20; we have dredged back the level, and so improved the drainage and improved the depth, and decreased the number of locks.

2223. Mr. *Peel.*] What was the capital sum required to put the Lea in order when you first took it in hand, do you recollect?—In answer to that question I must divide the sums; we have spent a very large sum in improving the navigation *quà* navigation; we have also spent large sums in simply reconstructing weirs, and dredging; I should think on the Lea, including the Thames entrances, on which alone we have spent 70,000 *l.* in two miles, that is the two miles which I say are more like a dock out of the Thames down at Blackwall than anything else, including that 70,000 *l.*, our expenditure now would reach, I should think, about 200,000 *l.*

2224. Two hundred thousand pounds in all?—Yes, taking it all round; perhaps I am a little overstating it, because there may be mills bought in that; but roughly it may be taken at 200,000 *l.*

2225. In short, upon 25 miles you spent about 130,000 *l.*, and on the other two miles 70,000 *l.*?—That would be about it; I think it would be perhaps on 25 miles 100,000 *l.*; I think I ought to say 170,000 *l.*; I think 30,000 *l.* has gone in land, and mills and property, which we still have.

Cross-examined by Dr. *Adams.*

2226. You have stated, as far as I can gather from your evidence, that the land drainage would not be interfered with by a good system of navigation, under the management of the Conservators, is that so?—Certainly.

2227. Have you had your attention called to the district above Oxford?—I do not know the district above Oxford beyond the marshes; I have examined the marshes round Oxford.

2228. Are you at all acquainted with the nature of the country above Eynsham Bridge?—No, not well.

2229. Your answer has reference to general and not particular places?—Yes, the general knowledge I have applicable to the river on which the ancient navigation is maintained by flashes; I say that you might put that river, if you like, into a very efficient state as a navigation, and still improve the drainage of the land.

2230. Supposing you had got a river running through a very flat country with a large, wide range of meadows on one side of it, how would you propose to deal with the two questions of navigation and drainage in such an area as that?—As a preliminary thing I should dredge the river to get off the floods.

2231. But would you have locks or dams or weirs, or anything of that sort, across the main stream of the river?—If I wished to maintain the navigation, of course I should turn the flashes into locks.

2232. I do not know what you mean by turning flashes into locks; would you find it necessary in the main stream of the river to erect some dams of some sort or other, whether they are weirs or whether they are locks, for the purpose of navigation?—Yes, and I should combine that with dredging.

2233. Is not the natural effect of any obstruction of that sort to the main stream of the river to cause a large quantity of silt to be collected at that point?—No.

2234. You do not agree with that?—No; if you put in proper weirs and dredge the river properly, you may get water better than before, you may have a better fall for your drains.

2235. Would not this occur, supposing you got a flood, and it rose to bank

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level, would not bringing down a large quantity of silt with it, deposit it in a part which was choked by the dam?—No; not in the Thames.

2236. Why not in the Thames?—That silt generally collects below the dams; at the junction where the water becomes foul, you are liable to have shoals thrown up in any river that shoals at all, but it is not above the dam.

2237. Would not the effect be, therefore, that it would act as a sort of strainer for the silt of the river?—No; if you have a river well made with good weirs, everything goes through; the liability you have, is that of hills being thrown up below the weirs.

2238. You and I understand weirs in two different senses; will you describe to me what you mean by a weir?—I mean an obstruction across the river with gates.

2239. I ask you whether, when you have locks in the main stream, you would not have weirs in the main stream too?—No; we should have the locks at the side; a lock is at the side of a weir.

2240. That is not the way the Thames is dealt with at present?—That is just the very thing, everything ought to be altered.

2241. You disapprove of everything that has been done?—I must say I have seen a great many weirs upon the Thames which are a disgrace altogether.

2242. These works of yours would naturally be very expensive, would they not?—They would be expensive.

2243. Where there is a very small prospect of navigation you hardly think it justifiable in spending money for those purposes?—That may be a matter for consideration; it may be a matter whether you keep up the navigation at all; if you abandon the navigation it may be undesirable to let the Thames flow down as a brook; it would be better to keep it in many places in ponds.

2244. You have heard that above Oxford the navigation has been for many years in a very declining state?—Yes.

2245. And that it began to decline at a very much earlier date than the navigation below Oxford did?—So I understand; and I do not wonder at it if it is a flashed navigation, as is most likely; there are not above 2 feet to 2 feet 6 draft of water.

2246. You have also understood, I dare say, that the population of the valley of the Thames is very scanty above Oxford?—It is a scanty population, undoubtedly.

2247. You have seen the Rivers Commissioners' Report, I presume?—Yes.

2248. Even taking Eynsham itself, the population is about 4,000 between there and Lechlade?—It is a very small population.

2249. Would you expect that there would be anything like a traffic at a place of that description which would at all remunerate for the expenditure necessary for the making of these works that you have talked of?—I think very probably not; I do not know sufficient of the place to say; many of the land-owners might wish to have a navigation because it is of great advantage with reference to the value of the land.

2250. You have heard about this drainage area; you have yourself spoken about a drainage area being offered, and you say that the system that you would recommend would facilitate the operations of a drainage area?—Yes, either way; if the river is put under the conservancy of the Conservators, to maintain a proper channel and keep it in good order without a navigation, it may be done with advantage to the drainage; but if, on the other hand, it is desirable to do so for the sake of the navigation of it, that also would be of advantage to the drainage.

2251. I will take the first alternative; supposing that there is really no navigation worth keeping up, would not the natural course be that the drainage should be the first thing to be considered in the matter?—Yes, you could not keep the river bed well up without considering the drainage; keeping the river bed up will be the means of keeping a regular channel and having a due course for the water, and keeping the channel so deep that when floods come they should not rise over the land.

2252. Would not that be what the engineer of a drainage district would turn his attention to first?—Yes; but the engineer of a drainage district would be doing more than is necessary for his own particular district, and then you get into the inconvenience of having partial works.

2253. Why should there not be a drainage district formed from the point where

where the navigation ceases, to the point where the Thames is to be a large river; what difficulty do you see about that?—You mean to divide it by having another conservancy.

2254. I take it, that the first duty of a conservancy is to look after the navigation?—Yes, and to look after, in such a case as this, the river.

2255. Is there one single word in any of the Acts relating to the Conservancy Board to show that they have any duty with regard to drainage; point out any clause in any of their Acts which shows that?—All I know is that they could not exercise their rights legally without doing the works for the benefit of the drainage.

2256. Supposing that they chose to embank the river; suppose that they thought that it was desirable to embank a certain portion of the river, might not that very materially interfere with the drainage of the district alongside of them?—No; no man would think of embanking the river, *quà* river; a landowner might embank the river to prevent the floods going over him; but no body of Conservators would think of embanking the river, because they would have no object in embanking the river.

2257. I will put this to you; suppose there is a rapid fall, and after that a long low level, it is desirable to keep up the water; would not the course of that be to put an embankment?—But an engineer would not think of raising the river above the level of the land; there is no object in the Thames, from one end to the other, to do such a thing as that; it is essential to deepen the river, and to keep the water below the level of the land; and if the river is well kept the body of the traffic should be kept in such a condition that it should only rise above the level of the land in extreme cases.

2258. You say that being your mode of doing it, what security is there to any landowner that that should be the mode of carrying it out?—The only security that I can see is to have a properly elected body of Conservators to see that they do their duty, and have a proper officer to deal with the things as matter of common sense and good management.

2259. I assume the case of landowners; what remedy should we have, supposing that the Conservators decided upon embanking a particular part of the river?—But they will not do it.

2260. But supposing that they do, will you have the kindness to tell me how I am to prevent them?—I do not know.

2261. Do you know many instances of a river being embanked?—A public body must exercise their rights for the general benefit so as to damage nobody, and they can do that; the Conservators would not think of doing anything to damage the landowners.

2262. You have seen a great many embanked rivers, have you not?—Yes.

2263. They were done for the purpose of navigation, were they not; was not the Shannon very much embanked?—Not in the sense you are speaking of, certainly not.

2264. Were any embankments made on it?—No part of the Shannon was ever embanked as regards the land; certain short branches were made with banks to carry the branch of the river down to the lock, but you leave the river in its natural state; then, again, there are instances of embanking lands to prevent the river, when it rises in high flood, running over those lands, so that the back drains, that is, the drains of the district, shall not be choked with the water flowing into them; that is often enough done, but they never think of raising a river and embanking it up.

2265. Are you not aware that there have been great complaints by parties resident upon the Shannon of the embankment of the Shannon, as to the injury that has been done to the drainage of the district?—No; the complaints with reference to the Shannon are that great improvements were not carried out so as to relieve the floods as much as was expected; there is not a single embankment from one end to the other of the Shannon that dams the water back in that sense; certain weirs were put up; the great error was that dredging was not done sufficiently, so that the water has not vent enough off the lands; the landowners who contributed complain that they had not the benefit which they expected; the landowners do not deny that the improvements of the Shannon did something to get off the flood water.

2266. But they still did complain?—Yes; I do not think you quite understand; the landowners have never complained that the lands were drowned

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more than before the works were done, but they complained that they have never had the benefit which they were promised.

2267. Have they not complained of the works that were done for the purpose of navigation?

Mr. *Reilly* submitted that the question with reference to the Thames was quite large enough to inquire into without going into the Shannon.

2268. Dr. *Adams.*] It is material for me to know when we are dealing with a public body, what is the proper mode in which we are to be dealt with; Mr. Beardmore knows the fact well enough?—Yes, I do; an enormous sum was spent upon the Shannon, and the landowners did not get the benefit of it.

2269. You say the district immediately adjoining Oxford?—Yes.

2270. Your mode of relieving Oxford from the floods would be by making a channel from Sandford Lock, and getting rid of Iffley Lock?—Yes; I think that would be the best way to dredge the Sandford Lock right up to Oxford, and make a fine deep river of it.

2271. That map takes in the very district you are mentioning; at present you are aware that there is a very large amount of flooding between those two points?—Yes, very large.

2272. You propose to dredge the river the whole of the way from Sandford to Oxford?—Wherever necessary; there are many deep pools in it now.

2273. A great deal of it would be very heavy work?—Yes; it is work to which Oxford should contribute; to get a good work it should be well done.

2274. What would you propose to do immediately above Oxford?—I have no fixed plan in my head, except it is first of all, to bring a better fall to Folly Bridge; then I should have a proper vent for the water through the bridge, which is at present very much obstructed; and then that would give a great vent for the stream above.

2275. Are you aware that the land from the place which flows as a canal down towards Berkshire, falls very much towards that westernmost stream?—There is a good fall just above Oxford.

2276. You see a place there called Four Streams?—There is a very good fall from Four Streams down the valley.

2277. Does not that fall principally run towards what is called the Berkshire side?—It falls down in the general direction of the valley.

2278. You are aware that there has been a large quantity of embankment done for the purpose of making the river come round into Oxford in its present course?—You are taking me back to historical times, are you not?

2279. No, you can see it if you have been there lately; is not the river at that point to some extent higher than the surrounding land?—The river is brought out to the mill there; it is out to the mill to some extent an embanked stream.

2280. If proceedings of that sort took place in the district that I particularly allude to, it might be very injurious to the landowners?—No, not if you would combine it with proper dredging and proper weirs, and means of bringing out the river; it gives you just as good facilities for drainage; if you have the river deep and proper weirs, you do not suffer in dry weather and ordinary dry time; it is the moment that the floods begin to rise that you suffer.

2281. You have spoken about making storeage reservoirs; you say you have no knowledge yourself that there are any places above Oxford where these could be made?—No, I think that is the place to make them.

2282. Did I not understand you to say that above Oxford you have not sufficient knowledge to be able to say whether storeage reservoirs can be conveniently made or not?—Certainly; I should say that that portion of the valley is destined some day to have large reservoirs.

2283. Then I certainly misunderstood you?—That is what I meant.

2284. In making storeage reservoirs, would you not consider it extremely advisable that there should be high land available for the purpose of storeage, on which you could make a storeage reservoir to the dead level?—That is a matter that must be very carefully considered; it would require an immense deal of excavation to get a good reservoir there; what you have to provide for is to pass into the river; it is a very large question altogether; I mean to say that the general position and aspect of that country, and the under strata, would

would imply that that is the place where some day or other there will be no river.

Further Examined by the *Committee*.

2285. Mr. *Acland*.] What place?—Above Oxford.

2286. No particular place?—No.

2287. Captain *Vivian*.] I think that you said that the cost of putting the River Lea in order for 27 miles was about 200,000 *l*.?—About 170,000 *l*., I should say.

2288. It costs you about 5,000 *l*. a year to keep it in order?—The whole maintenance and the whole establishment.

2289. Are you sufficiently acquainted with the present position of the Thames to form anything like an approximate estimate of the cost of putting that river into order?—I think the locks are so much fewer in number, and there are many reaches of the river all already deep, that the money stated by Mr. Leach would be reasonably expected to be sufficient to reconstruct and reset a great portion of the works, but I cannot pledge myself exactly, because I say that it is necessary to have a proper survey made before estimating the exact cost.

2290. But you can form an approximate estimate of the cost?—Yes; then with regard to Oxford itself, the desirableness, or otherwise, of the works between Sandford and Oxford should depend upon the necessity of giving Oxford a proper outfall and other works that might be done in connection with the drainage of Oxford itself.

2291. Then you are of opinion that Mr. Leach's estimate is pretty near what the cost will be of putting the river in order?—Yes; Mr. Leach has been reconstructing weirs and locks on the Thames so much himself, that I should think there was hardly any man so competent as he is to judge of the thing; I think there are 11 locks altogether to deal with, and if you reckon from 10,000 *l*. to 15,000 *l*. a lock, or from 8,000 *l*. to 15,000 *l*., according to the number of the weirs, that that would be about the mark; there are 11 locks on the Thames between Staines and Oxford.

2292. How many locks have you got on the Lea?—I think originally when we began our works about 28; we have reduced them and got rid of a great many of them; that was an expensive work, but it was economical in the end; the land and everything else was improved, and by getting rid of the locks you get a so much better fall for your water.

2293. Lord *Eustace Cecil*.] Do you recollect what the distance is from Staines to Oxford?—I think about 82 miles; there are 11 important works which have to be dealt with.

2294. Were not the locks on the River Lea repaired at a most enormous expense; they seem to have cost three times as much as the estimate for repairing the locks on the Thames?—The River Lea was widened and deepened in the navigation 13 feet to 18 feet 6 inches, and part of it 22 feet 6 inches.

2295. As far as I can understand your evidence, the figures you gave were these, that for 25 miles of the River Lea it costs 100,000 *l*. to put the locks in repair?—Yes.

2296. And yet the estimate for 80 miles, supposing that to be the distance from Staines to Oxford on the River Thames, is that it will not cost more than from 30,000 *l*. to 50,000 *l*.?—I do not think Mr. Leach reckoned it anything less than 110,000 *l*. or 113,000 *l*.

Cross-examined by Mr. *Brett*.

2297. I understand you to say now, that Mr. Leach, in your judgment, has so great a knowledge, that whatever he says, you will adopt;—Yes; with regard to the expense of the locks.

2298. Have you yourself inquired into the matter, or made any calculation at all?—No.

2299. Then all you say is, that you would trust to what Mr. Leach has done or said?—Yes; I say this, to truly judge of the works necessary on the Thames there should be a proper survey made; that a large sum of money is wanted immediately everybody can see from the evidence of their own eyes; for instance, the lock just above Staines is now gone; 10 days ago, when I saw it, it was evident that it would go within a day or two, and it did go; of course you might spend 500 *l*. in stopping an evil for the present, or you might spend 7,000 *l*.

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or 8,000*l.* in reconstructing the whole work, and make it an efficient work, and after that it will cost you no more for the next 20 years.

2300. May I take this as your view, that without a careful survey of the river you cannot tell what the expense of putting it in order will be?—Not finally.

2301. Do you recollect the time when the River Lea was put in order; when was it?—Ever since the year 1850; we have not finished it yet.

2302. Then it was begun in 1850?—Yes.

2303. You say it took a certain sum to put it in order; can you tell me how that sum was raised?—It has been raised on debentures.

2304. Borrowed on debentures?—On the security of water rents, the tolls, and the property.

2305. The water rents, the tolls of the navigation, and the property?—Yes.

2306. You have spoken of the property, and you have said that the trustees are possessed of landed property and mills; is that so?—Yes.

2307. Now, you say that the two water companies, one pays them 1,500*l.* a year, and the other 2,000*l.* a year?—Yes.

2308. At the time that the arrangement was made with the water companies to pay that sum, did the trustees of the River Lea buy up certain land and certain mills?—No, they were possessed of the reversion of one mill, and of the fee of another large mill.

2309. Do you mean that they were in possession of one mill as the owners in fee?—Yes.

2310. And they were the owners of another mill which was let upon lease?—Yes.

2311. Did they buy up the term?—No.

2312. Were there not at the time that the arrangement was made with the water companies, certain millers who took a quantity of water away from the river?—Yes.

2313. Were not those rights bought up, in order to enable the trustees to supply the water companies with the water they required?—No.

2314. Then tell me what the arrangement was?—The trustees covenanted not to claim anything for the loss of water to their mills; the companies had to deal with all other mills themselves.

2315. The trustees covenanted not to claim compensation for water abstracted from their mills?—Yes.

2316. From the mills you have spoken of?—Yes.

2317. Did those two cease to work as mills?—Oh no; they are working just the same now.

2318. Was that part of the consideration for which the water companies agreed to pay the 1,500*l.* and 2,000*l.* a year?—Yes, that was partly the consideration; the tenants have not complained of it in any way; the New River Company had to erect an engine for the tenant; we only have the reversion; the tenant has it for 60 years; the New River Company had to put up a steam engine to throw the water up to compensate the tenant for the loss; that was done, and when the river falls below a certain volume the tenant calls on the New River Company to do it.

2319. Have the trustees of the River Lea power by Act of Parliament to sell the water?—Yes; they had the power given them by the Act of 1850, when they were made a corporate body.

2320. You say the two companies draw 35,000,000 gallons a day; is there any limit to their power to draw; are they entitled by their arrangement with the trustees or by the Act to draw as much as they like; they divide the water between them, leaving a certain share to the river.

2321. They may take a certain per-centage of the water out of the river; is that it?—They may take the whole, subject to leaving the river trustees a certain quantity at different stages of the river, divided into different quantities.

2322. They may take all the water coming down the River Lea, except a certain quantity?—Yes; provided they compensate the millers for it, and provided they execute works which will enable them to do it, or ask us to execute the works at their expense.

2323. The trustees receive a certain rental from this landed property and the mills?—Yes; that is the property.

2324. Is their landed property large?—It is rather valuable; we bought a good deal of land when we made some of the large cuts and turned it into wharf land; it is very much increasing.

2325. You bought land on the banks of the river and turned it into wharf land?—Yes; adjacent to London.

2326. Then is the income which you derive from that property expended in maintaining the river?—Yes, and paying off the bonds, or in improving it, and further works; at present we have paid off no bonds, of course we have always been borrowers.

2327. You say you paid the bond debt with it, are there any shareholders or any dividends?—It is absolute conservancy.

2328. They are trustees?—Unfortunately our trustees are not even paid for coming to the Board, which is a very great misfortune; there ought to be a small fee in order to get a sufficient number of members at the Board.

2329. Supposing that the receipts from the three sources are larger than the expenditure, what becomes of the surplus?—We should have to pay off the debt.

2330. That goes to a sinking fund to pay off the debt?—We should be obliged to pay off the debt with it.

2331. I do not know whether you can look forward to that as a possibility, but supposing the debt were paid off, are the tolls to be reduced or not?—Then the tolls would be reduced.

2332. Now you have said that you have made certain calculations about the water companies as to what it costs them to deliver the water; is that so?—Yes, I made the calculations.

2333. Will you tell me from what have you made those calculations?—I took the returns as given by Mr. Bateman of the gross revenues as returned by the companies, and I divided them by the gross quantity of water received.

2334. You have taken the returns that are set out in Mr. Bateman's pamphlet; is that so?—Yes, Mr. Bateman professes to get them from the City of London; I have tested some, and I know generally that some are correct, therefore I can prove them.

2335. You have arrived at a certain price at which you say you have calculated the cost of delivering the water?—Yes.

2336. Have you averaged that amongst all the companies?—Yes.

2337. Do you know whether that sum represents at all the cost of delivering water; is it all the same with the different companies?—Certainly it differs.

2338. And differs very greatly, does it not?—I should think the West Middlesex pay higher than the East London, because the West Middlesex have a higher district.

2339. The cost of delivery depends a great deal then upon the height of the district?—Yes; but in such an immense average of water the outlay is very large; I think, upon a rough estimate, it is fair to take the whole together.

2340. I only wanted to know what you had done; you have averaged all?—Yes.

2341. And the result which you have got at is simply one from Mr. Bateman's pamphlet?—Yes, from the figures given there.

2342. You have told us about the first expenditure; have you at all considered what the annual expenditure of keeping up the works would be?—I have only taken it in the rough way that I have stated; a great deal of the annual expense will depend upon capital outlay on the works; if the locks are gradually rebuilt in a proper substantial style I have found that the new work goes out of date as regards annual expenditure; there are no further expenses with it; a well-constructed lock is, necessarily, a permanent thing.

2343. Assuming that the river is put into a good and satisfactory state by the expenditure mentioned by Mr. Leach, have you at all calculated what the annual expenditure of keeping it in a good state would be?—The figures that I have stated mean that there is nothing to be spent out of that in restoring the works; I have been informed that 30,000 *l.* must be spent at once; they reckon that 30,000 *l.* must be spent at once; you could not attempt to deal with the river as it is now with a sum of 8,000 *l.* a year.

2344. I ask you a simple question, to which you might answer yes or no; have you calculated the amount of the annual expenditure of keeping the river in a proper state, supposing it is put into a proper state by the outlay which Mr.

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Leach has mentioned?—No, I have not; the rough estimate that I have made that the river is to be put into a fair state of repair.

2345. Have you made any calculation of what the annual rents would be?—No; my experience is that if you improve the navigation you derive a better income.

2346. In your judgment, would the works of which you have spoken for putting the river into a good state be an advantage to the landowners on the river and the riparian proprietors past whose landed property the water passes?—Yes.

2347. And it would be an advantage to the towns by which the river passes?—Yes.

2348. I want to know whether, in your view of this scheme, you have considered whether it would be fair and just that those people should pay a part of the expenditure?—That is a very difficult question to judge of; but you must recollect that, if you have the owners of the river benefited by its improvement, by means of having a good navigation, if there is a navigation I take it that they will pay tolls on it; the way the landowner contributes to the navigation is by paying tolls.

2349. Is the carrying of the goods upon the river the advantage which you say will be afforded to the riparian proprietors?—Yes.

2350. Is that the advantage that you mean it will be to them?—I mean that is part of the advantage, and also getting the floods off, that is another advantage, and, of course, keeping the river sweet is another advantage; these are all advantages.

2351. May I take your answer to be that you think that the riparian proprietors would sufficiently pay for any advantages given to them by means of their paying tolls?—That is the way they do pay it.

2352. Would they get no further advantage than that of having goods carried backwards and forwards?—They would get the floods off better; their lands would be less drowned, the low-lying lands would be less drowned in the winter time, and they would be benefited by that.

2353. Is it a part of your view that the riparian proprietors ought to pay anything towards these works?—I have formed no view about it in that respect at all.

Cross-examined by Mr. *Toulmin Smith.*

2354. You told us the length of the Lea navigation was 27 miles?—About 27 miles.

2355. Does that embrace the navigation?—Yes.

2356. In that I think you say there are 28 locks?—There were 28 locks.

2357. How many are there now?—About 20.

2358. You found it advantageous, then, to reduce the number of locks?—Yes.

2359. That, I presume, lessens the expense of maintaining the works?—Yes.

2360. You told us of the Acts under which the trusts are now guided; those are the Acts of 1850 and 1855, I think?—Yes.

2361. Those, you consider, are your working Acts at the present time?—They have powers under the old Acts as well.

2362. The old Acts of the River Lea navigation go back as far as the time of Elizabeth, do they not?—Yes.

2363. For a very long period the New River Company has been intimately mixed up with the River Lea navigation?—Yes, they began by paying the River Lea 300 *l.* a-year, and then the River Lea paid them 100 *l.* a-year, so that it was 200 *l.* a-year net.

2364. They were, in fact, intimately connected with one another in many respects?—Yes, it is recognised at a very early date; there was a report made by Sir Christopher Wren to King James, stating that the interests of the New River and the navigation were clearly one.

2365. And, consequently, the New River Company have always been represented on the Board of the Trustees of the River Lea, has it not?—Perhaps you can tell me, I am not quite sure, whether the Act of 1851 gave them a seat or not.

2366. By the 7 Geo. 3, c. 51, s. 1, "the Governor, Deputy-Governor, and Treasurer

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Treasurer of the New River Company for the time being shall be, and they are hereby appointed trustees for the making, extending, improving, and maintaining the navigation of the River Lea"?—Yes.

2367. You recollect that the Act of 1850 continued the trusts then in being, and only made them into a corporation?—Yes; I think that where a water company is so greatly interested in the management of a river that it is very desirable that they should be in some form represented.

2368. It was under the Act of 1850 that the Trustees of the River Lea were first empowered to make agreements for the supply of water to any water companies?—Yes.

2369. The 68th section of the Act of 1850 gives them power to make an agreement to supply water?—Yes.

2370. That section is as follows: "And be it enacted, that it shall be lawful for the trustees from time to time to contract and agree, either permanently or for a stated period, with any waterworks company, corporation, commissioners, or persons, now or hereafter to be authorised by Act of Parliament, charter, or otherwise, or pursuant to any agreement or contract already entered into by the trustees, or by any person authorised by them in that behalf, to supply with water the Cities of London and Westminster, or either of them, or the suburbs thereof, or any part thereof respectively, or the inhabitants of any other town, district, or place within the counties of Hertford, Essex, or Middlesex, requiring a supply of water, for domestic, sanitory, public, trading, business, or any other purposes whatsoever, for the purchase and taking by such waterworks company, corporation, commissioners, or persons may agree to purchase and take, and to enter into and make such terms, stipulations, and agreements for effecting the purposes aforesaid, or incidental thereto, as such waterworks company, corporation, commissioners, or persons and the trustees may mutually agree upon." That is practically their selling power?—Yes.

2371. That, I think, was to supply water *pro ratâ*, was it not?—At the same time there were incorporated clauses by which they sold water *pro ratâ* to the East London Company.

2372. But they have ceased to supply water *pro ratâ*, have they not, and they now sell it at a fixed sum?—Yes, financially it did not suit the River Lea trustees, and a new arrangement was made in 1855; it suited us better to have a fixed sum, that was, commuted to a fixed sum.

2373. I find the 4th section of the Act of 1855, is this: "On the passing of this Act, the liability of the New River Company to pay to the trustees the yearly sum of 1,850 *l.*, and the liability of the East London Company to pay to the trustees the yearly sum of 250 *l.*, and to pay to the trustees under the recited Acts or any of them, or any contract or otherwise, any increased or other sums shall absolutely cease." Then the 5th Section is, "The two companies shall pay to the trustees as by this Act provided, the aggregate yearly sum of 3,500 *l.*; and the New River Company shall pay to the trustees, as by this Act provided, the gross sum of 42,000 *l.*; Provided always, that as between the trustees on the one hand, and the two companies on the other hand, that aggregate yearly sum shall be paid to the trustees, as to the yearly sum of 1,500 *l.* part thereof, only by the New River Company, and as to the yearly sum of 2,000 *l.* residue thereof, only by the East London Company." That is the position in which the things now stand?—Yes, a large sum of money was paid for works.

2374. Forty-two thousand pounds?—Yes.

2375. Those are specific works done by agreement?—Yes.

2376. In spite of your recollection with reference to the New River Company, and the River Lea Trustees, that it was not thought desirable that the management of the River Lea should be placed in the hands of the water companies, it has never been suggested or ever suggested that the management of the River Thames should be placed in the hands of the five companies who take the water from it?—Not that I know of.

2377. How does that bear upon this case before us?—The New River and the East London Water Companies thought it so necessary to have the control of the river that they brought in a Bill to take possession of the River Lea in 1854, and they gave notice for taking possession of the River Lea.

2378. The New River Company alone?—The New River Company alone did it, offering to bring the East London into the arrangement; the project was to take possession of the river, and conserve it themselves.

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2379. But Parliament did not sanction that arrangement, and the Act of 1855 was passed?—It was turned into the Act of 1855; in point of fact, it was found that it was not a desirable thing, and we entered into the arrangement which is set out in the Act of 1855.

2380. Besides the works that were done under that Act, for which the sum of 42,000*l.* was paid, the water companies have the power to call on the trustees of the River Lea Navigation to do works whenever they think necessary?—Yes, upon tendering the expense.

2381. But it is then obligatory on the trustees of the River Lea to do those works?—Yes.

2382. Besdes those works there are drainage works, are there not?—Yes.

2383. I understood you to have stated that the trustees of the River Lea Navigation have power within their Acts to divert sewage, and that any or either of these companies may call upon them or require them to do these works?—So far as they can do them.

2384. But are you not aware that no such power whatever exists in the Bill before the Committee?—I thought that was the essence of this Bill.

2385. No, it is not?—That no sewage should be carried into the river.

2386. If you have read Mr. Leach's evidence, or Mr. Castle's evidence, or heard it, you will find that they do not propose to do any works other than those which are beneficial to the navigation of the river?—Not to do the works themselves, certainly not.

2387. Nor to compel anybody else to do them?—They are to have power to prevent the sewage coming into the river.

2388. Under certain circumstances?—Throwing on parties, who may send sewage in a way of dealing with it in some other manner.

2389. But you have the power of doing works for these water companies?—If we can do them; if it lies within our power to do them; if upon any part of our banks, or any portion of the stream, we can do anything to benefit the companies, we have to do it.

2390. Whether it relates to sewage or anything else?—The arrangement does not go further than if we can do it.

2391. You mean if it is within the bounds of your jurisdiction?—Just so.

2392. You said also that you have large powers to prevent the pollution of your river; but, notwithstanding those powers, within the two Acts you have recourse to the 74th section of the Thames Conservancy Act, 1864?—Yes.

2393. How is it that the powers which you have are confused or difficult of operation?—They are not so summary as could be desired; where you have a factory or a wrong-doer on the banks of your river, they very often will persist, and if you can pull them up at once to a court it has a very excellent effect practically, and it is often a way of getting rid of the nuisance.

2394. Mr. Leach, I observe, is greatly in favour of that mode of dealing with these people; but still he found that that would not prevent the nuisances by which this stream was polluted——

2395. Did you hear Mr. Leach's evidence?—Yes.

2396. Do you remember he stated that that did not succeed in preventing the pollution of the river by the sewage of towns; Kingston, for instance?—No; that was a case where Kingston had old sewers; Kingston is one of the oldest towns in England, and had old sewers running into the river; there was a nice legal question whether they could alter these drains and carry the sewage of the town into the river; there was a question that at all events the judge decided in favour of Kingston.

2397. The opinion of the judge was that he could not decide in favour of the Conservators of the Thames against Kingston unless it was clearly shown to him that a given amount of sewage would be poured into the Thames more than was heretofore poured?—Yes; I take it that the powers proposed by the Bill now before the Committee extend to remedies against sewage, in consequence of the difficulties that have occurred.

2398. In consequence of those difficulties?—Yes; I am not perhaps correct, but the Counsel will correct me if I am wrong; I think there are far more powers in this Bill proposed to keep the river clean than there are in the Lower Conservancy Act as it now stands.

2399. You think, at any rate, then, that there are more powers?—Certainly; I think as regards the water companies—I will not say the water companies—

but

but as regards the supply of water to London, it is most desirable to go beyond any previous legislation to keep the water in a pure state.

2400. In fact, you agree with what my learned friend Mr. Phinn said in his opening address, that these are matters with which it is necessary to deal with a strong hand?—Yes.

2401. Do you not think that there ought to be power given to the Conservators to do these works, and to make it obligatory on them to see that the sewage is diverted from the river?—That is a very nice distinction; all you can do is to have the strongest possible power, and to give the Board who have the power an efficient means, by way of police, &c., of legally seeing that these powers are carried out; you must throw the onus of the doing away of the pollution on the parties who cause it.

2402. Ought you not to throw the onus of doing that upon a body like the Conservancy Board, which exists for the purpose of keeping the Thames in a good state for navigation?—That I take to be the intention of the Bill.

2403. You think it ought to be stringent?—Most stringent; I cannot speak too strongly, as being accustomed to watch water all over the country; I go all over England and Scotland, and other parts as well, with reference to these questions, and all I can say is that the powers at present existing are not half strong enough; everywhere iniquities are going on in the way of fouling water, and the system of drainage is getting to such a head that there will have to be some very strong powers taken; it must come to a head at last; look at the Yorkshire rivers; it is positively frightful, the Rivers Aire and Calder for instance.

2404. If the companies are called upon to contribute, I understand you to consider that they have a claim on the Conservators of the Thames for their protection and care, and to see that the pollution of the water is prevented?—Certainly.

2405. Is that part of the consideration, if I may so express it?—Yes; that is why I think that the Conservators ought not to be starved in the management, and that there ought to be money to do it; you cannot deal with these things unless you have a very strong hand.

2406. You mentioned as the cost of distributing the water among the London companies as 1·91 *d.*?—Yes.

2407. I think you did not take into account in that reckoning the laying expenses?—The expenses of laying pipes is capital expense, it is an annual expense; I simply referred to the interest on capital expended.

2408. We have to pay interest on that capital expended on all the works, pipes, engines, and everything else?—Yes; the 3 *d.* is to pay capital.

2409. What should you suppose, after taking all those enormous expenses of capital, is left?—It all depends on what is the rate at which you have borrowed the money; we know at present it has been a financial success; an enormous sum of money, above four or five millions, has been spent, but still everybody has been paid interest and dividend.

2410. At the same time you take 4·87 *d.* as the price of the water and 1·91 *d.* as the cost of distributing; the result of that does not give at all my idea of what the profits of the company are?—No; the profits of each company must depend upon the management.

2411. The statement of those figures before this Committee does not give the Committee any idea at all of the profits of the company, we must know what is the capital sum expended; in fact, we must see the details?—Unless you apply these figures to the capital expended you will not get the proper result; you must divide the capital expended into borrowed money and share money in different proportions.

2412. You have stated that Mr. Leach agrees with you that where there is anything to be done it is necessary to have an accurate survey of the river, and the plans well arranged?—Before large works are done.

2413. The large work which we are dealing with is the work of restoring the Thames to a state of good navigation?—What I mean is this, you may expend the 30,000 *l.* which was spoken of in public works without waiting for the survey, but I need not tell you that some of it must be spent; where the money is to come from I do not know, but at this moment the worst lock above Staines is all in ruins; you do not want a survey for that.

2414. I understand that you agree with Mr. Leach's estimate, that the works

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cannot be thoroughly and efficiently done for a less sum than 112,000 *l.*?—I should think you ought to have that, certainly not less than that; I think Mr. Leach did not stop at 100,000 *l.*, but I think 150,000 *l.* was mentioned.

2415. Before the works included in that estimate can be done, I understand you to say that a careful survey must be made and a careful plan framed?—Yes; you want to know where the dredging may be effected; you may over dredge the river, so as to make the upper part a shoal; the whole matter is a matter requiring a good deal of care, and a good deal of skill.

2416. In the course of dredging you occasionally assist the navigation and the water companies?—Yes.

2417. Do you not think, no survey having been made, that it is rather an unfair thing for the riparian proprietors to come to the water companies and ask them to find the whole capital necessary for improving the navigation, and to effect a benefit, the greater part of which is to be derived from the navigation?—I think that the water companies might fairly require that if the traffic were improved, and the revenue were sufficient, that if the tolls were lowered, their rate might be lowered; that is to say, that everything should be satisfied and everything kept in order, and if there was a surplus, if they were going to lower the tolls, I think it would be very fair to lower the rate of charge to the companies; that would be fair enough, but I do not think it is a thing very easy to arrive at; it would be an expensive affair altogether.

Cross-examined by Mr. *Holland.*

2418. You understand that the landowners, the riparian proprietors, and the towns pay you tolls in proportion to the benefit they will get by the navigation being improved?—I did not say in proportion; I said that was the way in which the landowners pay it.

2419. You are aware that the Bill may be divided into two parts, the improvement of the navigation, and the stoppage of the sewage pollution of the water; are not all those people, the landowners, the riparian proprietors, and the towns, equally interested with the water companies in the improvement in that respect; as regards the pollution, the riparian proprietor is equally interested with the water company, is he not?—I do not think equally; keeping the water clean predominates above everything.

2420. If not equally interested, he is interested, at all events, in the purity of the water?—Yes.

2421. In your judgment, if interested should he not pay some proportion of the expenses that are incurred for purifying the Thames?—I have no plan; it is a difficult thing to say; all legislation must be a rough process; you cannot get at minute details in matters of this kind.

2422. Ought they not, if they derive benefit from the river being purified by these works, to pay some fair sum in proportion to that benefit?—I admit they pay a large sum in tolls; I do not see any other way of levying it except by tolls.

2423. Do you think that is a sufficient reason for putting some rate upon them, that a mere opposition would be created by the Bill, for that is what the promoters seem to think?—The difficulty would be in the assessment of the benefit correctly.

2424. There may be a difficulty in assessing the benefit, but in principle they ought to pay something?—I say in principle they do it when they pay tolls.

2425. Sir *G. Bowyer.*] Supposing a farmer has a farm abutting on the river, how do you make out that he derives any great advantage from the greater purity of the water?—I do not think he does; I think the landowners are greatly interested in keeping the water sweet; I think so with reference to the "amenities," as the Scotch say.

2426. That is to say, if the water is clear it is pleasanter to look at and more agreeable?—And I think the estate is benefited; it is a very difficult thing to fix a monetary value for it.

2427. Mr. *Holland.*] If he uses his water for domestic purposes, it may be some improvement; am I right in understanding you that at first the New River Company and the East London Water Company paid a *pro rata* charge; but that was found to be inconvenient, and afterwards they paid a lump sum; was

was not that what you said?—I have my doubts whether the New River did pay a *pro ratâ* charge; the East London certainly did pay *pro ratâ*.

2428. It was found to be inconvenient, and it was thought better to have a lump sum charged?—The River Lea Trustees took that view.

2429. You say the traffic upon the River Lea has largely increased; is it not also the case that the traffic on the Regent's Canal has also increased?—Very largely—that is right through the heart of London.

Cross-examined by Mr. *Bailey*.

2430. What do you mean when you used the expression that the water companies are trustees for the public?—You levy all your income from the public, and if you do not behave well, the public will take it out of your hands; I mean a well administered company must look after their concern, and that they will supply the public in the best possible way; hitherto they have done it in the best possible way.

2431. You are speaking of the water companies?—Yes; I think the duties of the London water companies are performed admirably, and so long as they look after their duties in the way that they are doing, they will give the public satisfaction; but if they treat it as a mere question of earning money there will be sure to be dissatisfaction.

2432. Are you not aware that the companies are already limited with respect to the maximum rates which they may charge?—Yes, it is in that way that I say they are only trustees for the public; because the public must come in; if they make beyond a certain profit, the public must have a reduction of rates.

2433. Up to the amount of profits which they may make within their powers and limits, you do not consider them trustees for the public?—I used the expression in that way; I think their interest is to serve the public in the best possible way.

2434. What I want to ask is, as regards the profits which the companies may make within the Parliamentary limit imposed upon them, do you consider that they are trustees for the public in respect of those profits?—I do; because it is so much to their interest to give good water, that practically they have to deal with the public; the public is their source of revenue.

2435. Do you think, then, that if Parliament has defined the maximum rates which they may charge, if the companies by industry and good management make considerable profits within these limits, that they are trustees for the public in the sense that their moneys may be applied to public purposes?—I think if the application of the money to public purposes forms a part of the question, that it is a very fair subject for a contribution from them.

2436. Then am I to understand you that you mean that for every contribution which the companies make out of such profits they are to receive a *quid pro quo*?—Certainly; that is the whole idea.

2437. You do not contemplate that simply because they make profits within their maximum, they are liable to such an application of them?—No, certainly not; the whole gist of the thing is an improvement of the supply, or rather maintaining the supply in a clear and pure state.

2438. You draw a clear distinction between a company, such as a water-works company and a body like the Conservancy Board; that is to say, that a body like the water works company is incorporated for the express purpose of making a profit?—Quite so.

2439. And, in fact if the profits that it makes, are practically interfered with, that that will tend to damage the enterprise?—Yes, but it is just the opposite in this case; you improve the enterprise by improving the quality of the water, and what the public expect is, that the water shall be looked after.

2440. But still I understand you to say, that you consider that the measure of improvement is to be the measure of contributions by the companies?—Yes, the possibility of improvement and keeping such a conservancy that the water shall be without suspicion.

2441. Surely you do not mean the possibility?—It just comes to the same question as the landowners' question; if you wish to estimate the exact amount of pecuniary improvement, it is very difficult to get at it.

2442. That I grant, but it is certainly an object to be kept in view, that you shall not call upon them to contribute such, as far as can be ascertained, to the benefit conferred upon them?—Certainly not to contribute more than shall

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reasonably secure the objects of having an unlimited and pure supply for such a population as London is becoming.

2443. You spoke of the expense which attended the improvements after the Act of 1852; I understood you to say that some of the companies felt it for some years?—I understood so; I think the Chelsea felt it particularly.

2444. It was the first outlay which Parliament thought it necessary to impose upon them for the sake of purity of supply, and in return for which they grant no additional benefits?—Yes; but you must recollect that although Parliament chose to compel these companies to move, the Lambeth had already moved of their own accord, and it was becoming necessary, because the river was becoming so foul that it was necessary to move.

2445. Do you not think that having undertaken such a large outlay gives them a claim to the indulgent consideration of the Legislature?—Certainly; I think it is a common interest entirely.

2446. You said at that time that they got a new lease?—Yes.

2447. You do not think that the terms of that new lease ought to be wantonly disturbed?—No, I have never heard of any proposition to disturb it; I rather think it is a proposition to extend that state of things; by adding additional security to the sources of supply you extend the value of the water property, that is, the water stock in London.

2448. Are you not aware that a proposition has been mooted in bringing forward this Bill, to throw upon the water companies the whole of the expense of putting the Thames into a proper state of navigation for the benefit of the millowners, the benefit of the landed proprietors, and the benefit of the water companies?—There is nothing fixed before me as to that; the amount of money to be contributed has been fixed; I think the interest of the water companies so predominant that they should pay a large portion of the expense, but I think myself that the traffic will materially assist the matter, and by-and-bye, as things improve and as trade increases, I think you will find a very altered state of things.

Cross-examined by Mr. *Sargood.*

2449. Have you had occasion to consider what the amount of traffic will be likely to be on the Upper Navigation after the repairs are done?—No, I think this; that if you have a proper communication with the Oxford Canal there will be a very considerable downward traffic, which is at present almost nil.

2450. You think that, notwithstanding the competition with railways?—I think the portion of the Thames above Staines up to Reading ought to have a great deal more traffic than it has now, but there is no doubt that the railway companies are so much superior to the navigation that they will have a slow increase; it is very slow upon the River Lea; the increase very much disappointed us at first; for four or five years after we made great improvements the traffic seemed to languish and would not rise; the railways seemed to step in and take everything, but that there was a great increase of traffic I have no doubt at all.

2451. Have you any competition by railways against you there?—No, with the exception of one or two articles; I have estimated that the railway companies have taken everything that we used to have; for instance, the article of coals has nearly gone, and the article of flour has nearly gone.

2452. Have you no new traffic springing up in its place?—Yes.

2453. Is that traffic of such a character as you think is likely to remunerate you on the present navigation of the Thames?—Yes.

2454. What does it consist of?—I think, on the present navigation of the Thames, there would be a considerable delivery of coals downwards from Oxford, not upwards; we find there is a great tendency in coals now to increase downwards; the railways will deliver and shoot into the barges, and they deliver downwards; the inland coal traffic used to be in the Thames out of ships into barges, and upwards; that is now getting all reversed; I should take it that the upward coal trade above Staines has entirely ceased.

2455. Have you an idea, then, that after the necessary repairs are done, that the expenditure of the Upper Navigation will be met by the increased traffic in course of time?—I think so; in course of time that might be so, but there is this to be borne in mind, that with the largely increased traffic you have more expenses; seeing the low ebb at which the traffic has got, it is very difficult to anticipate that that traffic within any reasonable time will reach the expenses; I should think it is not likely for 15 years to come to get to that.

2456. There

2456. There is something more to be thought of beyond the mere outlay on the river itself; there is the annual loss to be thought of for the next 15 years, you say?—That is what is thought; that is the way the contribution is asked for.

2457. You think that the contributions, whatever they are, should meet that difficulty as well as the present required outlay?—Yes.

2458. If the matter goes into the hands of the present Conservancy, I think there is a fair claim on their resources for some portion because it increases the traffic on the lower portion of the river?—The increase of the traffic on the upper river increases the traffic on the lower.

2459. If they have not resources, of course it behoves them to look out for an accession if they are to take this responsibility?—It is a very difficult thing to deal with when there is a thing in a state of bankruptcy; the question is how you are to get out of it.

2460. Mr. *Acland.*] Are there any dues paid on the lower part of the river?—In the old state of things, the upper part of the navigation was a very different thing to what it is now; the ships brought coals which were shipped into barges; in fact, that is what has made London what it is, the traffic on the river; but in the new state of things railways compete with the river, and an enormously increased trade is done.

2461. Mr. *Peel.*] There would be no increase of coal traffic into London by water?—No; there would be a general increase.

2462. Mr. *Acland.*] I want to understand whether you have any source of revenue which would be increased by putting the upper part into this state; have you any tolls?—Yes; there are tonnage tolls to the Lower Navigation.

2463. Mr. *Sargood.*] You do not mean to say that loss has accrued upon any traffic upon the Upper River?—Yes; for instance, a vessel comes into the Pool loaded with barley from Scotland, and she pays the harbour dues to the Conservators; she unloads her barley into barges, and the barley may go up to Kingston or Reading, as it ought to be, if the navigation were perfect; the Thames Conservators get the dues from the ships.

2464. So they would if she unloaded and the barley were sent through the country by rail?—No; it is supposed that all these facilities increase trade.

2465. You do not suppose that these vessels come into the Pool in order to serve the Upper Navigation of the Thames?—They do; an enormous quantity of grain comes in; sometimes as much as 30,000 tons a year is brought into the Port of London, and transhipped into barges direct to go up the river.

2466. *Chairman.*] You said there was a complete stoppage above Staines now?—At this moment.

2467. What effect has that produced on the Lower Navigation?—That I do not know; of course, any through traffic is absolutely stopped, and there are no tolls at all.

2468. Then, to the extent to which it is stopped, there is a considerable pecuniary loss now on the Lower Navigation?—Yes; the lock-keeper at that lock told me that he lost 30 *l.* a month.

2469. Which lock?—The next lock above Staines, at Bell Weir; if the same toll is paid to the Conservators they are losing 30 *l.* a month.

2470. All the barges that come through the Lower Navigation with a view of passing upwards, of course, must be stopped now?—Yes.

2471. To that extent there must be a loss to the Lower Navigation?—Yes.

2472. Mr. *Sargood.*] With regard to the water companies, as I understood you, you were speaking of them as trustees for the public, and that the public are protected by the Act of Parliament in putting the maximum price that the companies may charge; that is so, is it not?—I did not mean that altogether; I meant that Parliament had given them the privilege for the consideration of supplying water to London; and that they may supply a good article, the advantage of having a good conservancy is almost incalculable.

2473. Do you think it quite right to present to the public, if Parliament think it fit, that they should compel the companies to contribute towards that which purifies the water and gives them a far readier access to their supply?—Yes.

2474. I believe they have never paid for water?—It is a dispute whether they have ever paid for water or not; Mr. Leach states that the 1,500 *l.* a year

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which is paid is paid for absolute works done, so that they do pay 1,500 *l.* a-year for water, but the Conservators, who have executed the works, have dredged to that amount.

2475. One way or other, the principle is conceded that they already pay the Commissioners, whether for water or for dredging, or whatever it may be?—Yes.

Cross-examined by Mr. *Gregory.*

2476. Just one question as regards the millowners. You have been asked one or two questions with respect to the millers; I understood you to say that in any well-devised scheme for improving the navigation, the interests of the millowners should be regarded; is not that so?—Yes.

2477. Has it occurred to you by what means their interests should be provided for?—By the ordinary rule of keeping up the water to head marks.

2478. Provisions should be introduced for maintaining those head marks, and keeping up a supply of water to those mills; do I understand that to be your view?—I do not know in what way exactly you wish that provision introduced; but the principal provision is, that the owner of the navigation, that is, the Conservator of the navigation, has power to fix the head marks, and to cause the water to be maintained at those head marks; the maintenance of the water of the mills is not an absolute duty falling upon the Conservators; that is, finding water for the mills; but it is the maintenance of the weirs in good repair, so that the miller shall have his share of the water.

2479. Having head marks, it is necessary that the weirs should be kept in good order, so far as to maintain the water as far as possible up to these head marks?—That would be partly the duty of the Conservators.

2480. There is another provision which is necessary, and that is to give them access to the water in case of emergency, and power of drawing down the water, is not that the case; you are aware that the weirs are liable to accidents in times of flood and so on?—The Conservators would make their own arrangements, with either their own officers, or they would appoint an officer to attend to the weir; that is the practice now. Of course you must have a proper officer to attend to the weirs which are under the orders of the Conservators.

2481. But the officer could not always be upon the spot, and the miller may suffer great damage from obstructions to the weirs before the officer could be brought to remedy it?—I think there would be some gentleman appointed by the Conservators, according to their judgment, to attend to it; it is perfectly possible that the millers, if there is no lock or anything else to interfere with them, would be appointed practically; there is no difficulty in it generally speaking; there would be a lock-keeper, and the lock-keeper has the control of the weir, and he is responsible if the gates have to be lifted; he is responsible to do it properly.

2482. If there should be such a lock-keeper immediately on the spot, do you see any objection to giving the millers powers, in cases of emergency, with reference to the water, or removing obstructions?—I would not give them Parliamentary powers; that must be managed by the governing Board.

2483. Do you mean to say that the miller is to be entirely at the mercy of the governing Board with respect to his rights?—He need not be at the mercy of the governing body; no doubt a quarrelsome miller is a very troublesome person to deal with; I have never been able to see any difficulty in managing the thing; the millers' men come down and open the gates; they very often will do it illegally, which is a very dangerous thing; you must have an officer appointed by the Conservators, otherwise the millers' men will come down and put boards on by the gates, to the damage of the landowners; it must be of the essence of the arrangement that it should be under the direction of the Conservators.

2484. Take a case of this kind; you are aware that heavy balks of timber are sometimes brought down in floods, are you not?—Yes, and the lock-keeper's duty is to get all hands to his assistance.

2485. Do you know that heavy balks of timber are brought down by the floods?—Such a thing occasionally happens.

2486. Of course I am taking the extreme case, because I am only seeking for power in extreme cases; those are brought down, and, impinging on the weirs, may they not do very great damage in a very short space of time?—Yes, it is a very

a very serious thing; I have known cases where a lock-keeper has had to call everybody to come to his help; but you do not consider law in those cases; the lock-keeper acts to the best of his means; it is like a house set on fire.

2487. But the miller may take a different view of it; he may wish to have his house not set on fire?—Yes.

2488. What is to become of him, supposing he has no power to remove these obstructions?—I suppose he would have an action against the Conservators for not doing their duty.

2489. That is the only remedy that you can propose?—Practically you cannot work the thing unless you have power; if you once give the miller a control over a weir it leads to endless litigation and trouble to everybody.

2490. As you know, I am not proposing to give him a control over any weir, I am only proposing that in case of emergency he should have certain powers?—I do not exactly know your proposition.

2491. My proposition is this, that in case of danger to himself or his property he shall have immediate power of interference, without applying to the Conservators; do you see any objection to that?—I think the thing is much better done by the Conservators' officer; if the miller has a complaint, he goes to the officer and says, "There is danger, you must lift the gates, or you must shut the gates." I think it would be advisable for the miller to have power to come to the lock-keeper and say, "I will have this done and that done;" I assure you it is a most inconvenient thing to have more than one master where there are several interests.

2492. A lock-keeper is but one man, he has no assistance at all except himself?—He will be authorised to call in assistance.

2493. But he may have to send all over the country before he can take any operations?—He will have to enlist the services of the miller's men; he will probably give them a trifle to help him, but in times of a bad flood he has authority to get one or two assistants to sit up with him during the night; during the time of a very heavy flood, which I think happened this winter, the men kept watch all night.

2494. You proposed, in fact, to leave the miller to the mercy of the lock-keeper?—I proposed to leave the river in the hands of an impartial Board, with strong powers, and they must appoint an officer likely to discharge their duties without fear or favour.

Examined by the *Committee.*

2495. When were the trustees of the River Lea incorporated by Act of Parliament, and recognised as proprietors of the River Lea?—As long back as King James the First's time disputes arose between the trustees of the River Lea and the New River Company as to taking water.

2496. Were there trustees of the River Lea before King James's time?—I think they began in the time of Queen Elizabeth.

2497. Was the River Lea navigable before the time of Queen Elizabeth?—I believe small boats have got up from time immemorial; it was considered that King Alfred went up there in boats.

2498. When was it first navigable by barges?—It was navigable by small barges in the time of Queen Elizabeth; I have dredged up parts of the old flashes.

2499. Have you considered it is an old navigable river?—Very old.

2500. Do you know any other navigable river in which the property of the water has been recognised; when there was this transaction between the trustees of the River Lea and the New River Company, was the navigation of the River Lea made use of?—The first transaction was about the year 1740; the River Lea allowed the New River Company to take a certain quantity of water, through a gauge, for the sum of 300 *l.* a-year.

2501. For the purposes of the navigation of the New River?—Not the navigation at all; it was for the water supply of London.

2502. You do not know the time when a property in the River Lea was just recognised by Parliament, unless as you suppose it was at the time of Queen Elizabeth?—In 1740, it was first apparently recognised, as it was in 1850.

2503. 1740 was the time at which the trustees acquired a property in the river?—Yes.

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2504. There were what you call the trustees of the River Lea before that time, or rather what we should call commissioners?—Yes, they are called trustees, but it was only in the year 1850 that the property in the water was given to them for the benefit of the navigation, and they were then incorporated.

2505. But the first time at which a pecuniary right in the river was recognised is 1740?—Yes.

2506. All the mills belong to the trustees, do they not?—No, the mills belong to the New River Company and the Government; there are the large powder mills belonging to the Secretary at War, and one or two private mills which have been bought up since by the East London and the New River Companies; the River Lea have three, and there are one or two distillers, and so on, who have some large mills.

2507. What do they do with the mills which belong to them?—They are all of them worked.

2508. Do they let them?—Yes, the River Lea trustees let them, and the companies let them; when the water is gone, or is supposed to have been diminished, an increase of traffic has induced the proprietors to put up steam to a large extent, and there are scarcely any mills now which have not steam.

2509. You have no difficulty with any mills belonging to you?—We have had difficulties.

2510. Do you not consider it would be a great fault in managing any river that all the mills should belong to a body who has the Conservancy of the river?—It is a convenience if you can afford to buy the mills; these arrangements on the Lea have arisen from the accidental circumstance of the mills coming into the market, or disputes arising, and so on.

2511. It will very much facilitate the management of the Thames if the Thames Conservators were enabled to buy up all the mills, would it not?—It would cost such a deal of money; there are certain mills which will have to be dealt with some day or other, and if so, it would be very desirable to give them power to purchase, not compulsorily, but the power of dealing; it is a very difficult question to deal with millowners, because they ask such a terrible price for their mills.

2512. The works which are proposed, will add very greatly to the value of every mill on the Thames, will they not?—Eventually, by a very slow process, but in the course of years I have no doubt they will add to the value, but that will be mixed up with the generally improved state of the property; it will be very difficult to assess the exact pecuniary proportion.

2513. If compulsory powers of purchase were given to the Thames Conservators over the mills, do you think that the value of the mill should be taken and carried over, if the Thames were left to its own accord, in the same way as they would be if the Thames were improved?—I can hardly tell; I never knew a miller undervalue his mill; it is astonishing what idea the millers have got of the value of their property.

2514. Mr. *Acland.*] Is it not the fact that if the Thames is left as it now is, that mill property will be very much depreciated?—Certainly I think it would be lost; at the same time there are so many circumstances arising that you can never estimate exactly the new circumstances which may happen; a line of railway may come and take a portion of a mill; I have known a branch thrown out near a mill which has given it increased value.

2515. Does it not make a very great difference to the existing mills on the Thames whether legislative powers are adopted, or whether the river is left to itself?—Certainly it would improve the value of the mills generally speaking: of course we must admit that if, for instance, the navigation were to drop, and if the Bell Weir were not repaired, a different state of things would arise.

2516. Should you draw this conclusion, that amongst the various persons to whom the Legislature must look to provide funds, millers must not be forgotten?—It is a very difficult thing; on the Lea there is a miller who is the largest contributor to the navigation, because he pays such large tolls; if you improve the navigation he takes to his barges, and pays immediately.

2517. Do you think it would be more expedient to look only to what might be got out of the millers by way of tolls, and not to call upon him to pay anything towards the improvement of the water?—I think you will find it very difficult

difficult to make him pay in any way; but if you could absolutely, by altering the pond of the Thames, give him two more feet of fall, it would be a very fair subject of arrangement for the Conservators to say: "Well, we cannot dredge the year, but we can give you more fall, and you will pay us."

2518. If the River Thames is put on a better footing with reference to the navigation and for drinking purposes, have you any doubt that the tendency will be to give more value to the property of the millowners?—Most certainly.

2519. Lord *Eustace Cecil.*] With regard to the 100,000 *l.* which you told the Committee was the expense paid on 25 miles of the River Lea, can you tell me what proportion of that sum was consumed by the repairs of locks?—I should say nothing to locks, because we did that out of annual repairs; I kept the old locks in repair out of the annual expenses in the best way that I could.

2520. Out of the original sum of 100,000 *l.*, no portion of that was spent on locks?—A sum has been spent entirely in rebuilding locks on a very much larger scale, and in dredging the river; the old locks we maintained out of income the best way that we could.

2521. What proportion does the repair of locks bear to the expense of dredging?—Dredging, deepening, and cutting most probably would be about 20,000 *l.* out of the 100,000 *l.*; what you may call earth work would be about one-fifth of the whole.

2522. All the rest locks?—Locks and works, and towing-path walls; works such as wharves, towing-path walls, and locks and weirs.

2523. I do not think you have quite answered the question, which is, how much did the repairs to the locks consume of the whole sum?—I never separated that.

2524. Or the rebuilding?—The rebuilding of towing-path walls are so connected with it that it would be about 80,000 *l.* out of 100,000 *l.*

2525. In short, I may calculate it at four-fifths of the expense?—It is difficult to apply it to the other cases, because locks are scattered on the River Thames; for instance, the stretches of river are sometimes very long between the locks; the locks are fewer, and you have larger works, and perhaps of a much heavier construction.

2526. As far as I can make out from the evidence which has been given by Mr. Leach, I find that in 80 miles of the River Thames, from Staines to Oxford, there are 30 locks, which he calculates will cost 112,000 *l.*, and which are to be rebuilt permanently; I understand you to say that on 25 miles of the River Lea there are 28 locks?—There were 28; we have got rid of seven or eight of them.

2527. You rebuilt or repaired 28 locks?—No, we have reduced the locks from about 28 to 20, and we have rebuilt 14 or 15 out of the 20; I have still about five left in the old state.

2528. The point of my question is this, that there seems to be 28 locks on 25 miles of the River Lea, and 30 locks on 80 miles of the River Thames?—Yes.

2529. The cost, in one instance, has been 100,000 *l.* with reference to the River Lea, and the cost calculated by Mr. Leach in the other instance is 112,000 *l.*?—Yes.

2530. I understand you to tell me that one-fourth of the expense of that is spent in dredging and maintaining the river; I suppose that would be the same in new buildings?—No, it might be very different indeed.

2531. That is what I want explained?—There are very long reaches of river; I thought the Thames very good water to a great extent, only comparatively flood shallows to be taken out; in the River Lea we practically reconstructed the navigation, and cut some very long reaches; for instance, one cut below Lea Bridge and Old Ford cost 30,000 *l.*

2532. So that the cutting and deepening cost 30,000 *l.*; I want you to separate the expenses?—Then observe, we came to a longer reach which was less expensive; we cut off the bank, and a variety of other works, and everything was done for under 5,000 *l.*; that was not above half; there are several reaches of the same kind.

2533. I wish to give you an opportunity of explaining that, because otherwise the figures seemed rather extraordinary, for it apparently costs three times more on the River Lea than it would cost on the Thames?—Yes; but the

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expense depends a great deal upon the number of locks, and the amount of fall you have got; our locks are very heavy, and on the Thames they are not so heavy, and it becomes more expensive in that way.

2534. Had you a great deal more mud and weeds to remove?—We had; we had to raise the Lea much more than the Thames will have to be raised.

2535. That would account forthe great disproportion in the expenses?—Yes; I do not think the Conservators would have to buy one single piece of land on the Thames; and at present I do not think there is anything to buy on the Lea; I think we have spent about 20,000 *l.* in land necessary for the works.

2536. Mr. *Acland.*] I wish to refer you to this passage of the Report of the Commissioners: "*Q.* Then, as to drainage; if the system be carried out of dividing the valley into a series of districts, and draining each district through the next district on the lower level to the river, the main drain would be thrown at the back of the embankments, and the embankments would serve to cut off the drains with the river." Does your opinion as an engineer support that statement, that that course may be adopted with advantage to the agricultural districts in the valley of the Thames?—In the upper part where there is an outfall, and to a mitigated extent in the lower part; but in the lower part it would only be in certain places where much embankment would be required; if you employed embankments upon the side of the river to prevent the floods rising over the land, of course you must have back drains to take the water off; but I cannot conceive the lower part of the Thames below Oxford to be embanked.

2537. Is there not a tendency at every lock to form a sort of hilly embankment for a moderate distance above that lock?—Not in the Lower Thames; the water comes nearly to the ground; but there is no case in the Lower Thames, at least I know of no case where the water is absolutely above; but there may be some mill-heads carried down where the water is on the mill branch above the land.

2538. Do not all those mill-heads tend to choke the agricultural drainage unless there is some back drain?—Certainly.

2539. Generally, with regard to all that part of the Thames which you know, do you think, with a view to the agricultural interests of the surrounding lands, that it is desirable to place the control of the agricultural outfall under this general management?—Certainly; it would be better for all parties if it were so; the parties owning the river would have more power to benefit the land, and the landowners might materially benefit the water.

2540. Colonel *Napier Sturt.*] Is the value of the gravel which is dredged from the bottom of the river at all in proportion to the cost of dredging?—It is a very fair source of revenue to the Conservators.

2541. Then it will pay of itself?—Sometimes; it will depend on whether you have a demand for it at the moment; indirectly perhaps; Mr. Leach uses gravel very largely for making concrete blocks for the banks of the river.

2542. In calculating the costs of keeping the river in order, it will not be fair to put down a very large sum for the expense of dredging; you must divide it into two accounts; if you were putting the river into order for navigation you would have to dredge out the shoals?—It depends on the circumstance whether you make a profit by it or not; you ought to make it pay considerably towards the expense of ballasting; I suppose we made never less than 200 *l.* a-year by ballasting.

2543. Lord *Eustace Cecil.*] What is the character of the Thames ballast?—The Thames ballast, where it exists, would be such as you see brought up in the barges—that grey, sandy gravel.

2544. I mean with reference to its value?—It costs, in getting, about 6 *d.* per ton, and it can be sold for from 1 *s.* to 2 *s.* per ton; I think the profit is not more than 6 *d.*, because you have to find the gear.

2545. Colonel *Napier Sturt.*] Do you consider the works for the improvement of the River Lea were conducted as economically as they could have been?—The works had been carried on on a very large scale; the locks in many respects have been made larger than they need have been in the lower part of the river.

2546. The works might have been done for considerably less than 100,000 *l.*?—Some might have been, and some not; some were larger works than need have

have been; I must say generally that upon the money expended a very fair financial return of five per cent. has been made. Mr. *N. Beardmore.* 12 June 1866.

2547. Sir *M. H. Beach.*] Has it been made sufficiently large to admit of steam navigation?—Steam has not come to be generally employed yet; we have tried to introduce it, but we found that one horse takes a barge down in one day, and that at present a steamer can do no more.

2548. It would be in the longer lengths that steamers would be of advantage?—Yes.

2549. But were these works made larger than necessary, with the idea of having steam navigation?—Yes, and an increase of the trade generally; they were also governed by the large billyboys from Yorkshire, and the barges on the Thames, with regard to works to be made of a larger size.

Mr. *Reilly* said that he had nothing to ask in re-examination.

Wednesday, 13th June 1866.

MEMBERS PRESENT:

Mr. Acland.	Mr. Neate.
Sir Michael Hicks Beach.	Mr. A. W. Peel.
Sir George Bowyer.	Colonel Napier Sturt.
Lord Eustace Cecil.	Captain Vivian.
Mr. Milner Gibson.	Mr. Yorke.

THE RIGHT HONOURABLE THOMAS MILNER GIBSON, IN THE CHAIR.

Mr. *Nathaniel Beardmore*, re-called; further Examined.

2550. *Chairman.*] You wish to make a correction in your evidence of yesterday?—I wish to correct an error in my evidence given before the Committee yesterday; the suggested charge of 10*s.* per 1,000,000 gallons is ·12 *d.* of a penny per 1,000 gallons; one-eighth of a penny is ·125 *d.* per 1,000 gallons. Mr. *N. Beardmore.* 13 June 1866.

The following are the Tables handed in by Mr. Beardmore yesterday, and referred to in Questions 2161 and 2164.

APPROXIMATE STATEMENT of CAPITAL expended in the Metropolis, in relation to the Supply of WATER and GROSS POPULATION.

YEAR.	Population.	Water Supplied		Gross Cost of Waterworks.	——
		Per Diem.	Per Head.		
		Gallons.	*Gallons.*	£.	£. s. d.
1850 - - -	2,400,000	44,383,000	18·5	4,738,878	1 19 –
1865 - - -	3,000,000	108,000,000*	36·0	8,614,212	2 17 6
INCREASE - - -	600,000	63,617,000	17·5	3,875,334	– 18 6

* *Note.*—Of this quantity about 57,000,000 gallons per diem are furnished by the New River and East London and Kent Water Companies, and the remaining 51,000,000 gallons per diem are pumped out of the Thames at Kingston; but these quantities vary greatly in summer and in winter.

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A PAMPHLET recently published by Mr. *Bateman* gives the following TABLE of the Progressive Revenue of the LONDON WATER COMPANIES' proportion of Working Charges and Surplus left for Dividends, the Water being all subjected to Filtration, and Pumped.

	Gross Revenue.	Working Expenses.	Money left for Dividends.
	£.	£.	£.
1858 - - - -	543,879	215,383	321,594
1859 - - - -	582,699	228,985	337,813
1860 - - - -	601,916	243,137	348,387
1861 - - - -	616,604	254,721	358,379
1862 - - - -	642,070	246,194	375,154
1863 - - - -	670,117	256,841	392,635
1864 - - - -	702,059	275,547	404,585

The following question and answer were accidentally omitted from the cross-examination of Mr. Beardmore by Mr. Toulmin Smith.

The locks are essential to the navigation?—Yes.

Robert Rawlinson, Esq., C.B., called in; and Examined by Mr. *Reilly.*

R. Rawlinson, Esq., C.B.

2551-2. You are a civil engineer, and have been engaged in works of civil engineering since 1832?—Yes.

2553. Have you had special connection with river and canal works as engineer of the Bridgewater trust?—Yes; I was engineer for the Bridgewater trust for some years, and had the management of the canal and old river navigation from Manchester to Runcorn, and from Manchester to Liverpool.

2554. You have been engaged in different capacities in the service of the Government since about the year 1848?—I have.

2555. You have made special reports on river and canal navigation for various purposes, have you not?—I have professionally made examinations and special reports; I reported specially on the canal from the Mersey to the Trent.

2556. To what authority?—It was a report made for the union of Stoke-upon-Trent; it was upon a rating question.

2557. You were also a member of the Royal Commission appointed some years ago for inquiring into the means of utilising sewage?—I was.

2558. Who were your colleagues on that occasion?—Lord Essex for the Lords, the late Mr. Ker Seymer for the Commons, Dr. Simoon and the late Dr. Southwood Smith, Professor Way, Mr. Bennett Lawes, myself, and the late Mr. Henry Austin, civil engineer.

2559. Which Commission made elaborate inquiries into schemes for the utilization of sewage, and made three reports?—It did; the Commission continued during eight years, and we examined personally every method at that period known for solidifying sewage, that is, for depositing it, and also for applying it in irrigation.

2560. Those reports are referred to in the Report which is before the Committee; I will proceed to ask you about that; you were lately appointed, with Professor Way and Mr. Harrison, Commissioners for inquiring into the pollution of rivers?—That is so.

2561. And you made one Report, and that Report, which relates to the Thames, is before the Committee?—Yes.

2562. For the purpose of that Report did you make a personal inspection of the river from Cricklade downwards to London?—We did, and held inquiries, as set forth in the commencement of the Report.

2563. In order to save time, and not to go into anything actually in the Report, you confirm generally, do you, the results of your investigation which

are

are contained in that Report; you adhere to them?—I adhere to the Report as embodied in that Blue Book.

2564. Generally, is it your opinion that the entire navigable part of the River Thames is in a state which requires urgently some better governing authority to be placed in the control of it?—That portion of the Thames which is under the jurisdiction of the so-called Commissioners certainly requires immediate attention, from circumstances detailed and so well known to this Committee; it has fallen into disrepair, and the Commissioners are, in fact, powerless; they have no funds, they have no legal authority, and some of the locks, as described, are, in my opinion, very dangerous; I may state that it is quite impossible for me or any other person to predict what may be the fate of those locks from one week to another, and I may illustrate it in this way: the late Sir William Cubitt was called on to examine the old river from Manchester to Runcorn, and to report upon it previous to the purchase of that river by the late Lord Ellesmere; Sir William Cubitt did examine it, and did report on it, and on his report the purchase was completed; within a week of the completion of the purchase one lock fell bodily in, and five were in such a condition as to be impassable to boats, and required much repair.

2565. And he had not anticipated that catastrophe?—No, he made a report which stated that the old river was in as good a workable condition as the Bridgewater Canal.

2566. You give that as an illustration of the difficulty of predicting how long navigation works will stand when they get into a bad state?—I merely give it as an illustration, that I dare not take on myself to say how long those locks may remain up, or how soon they may fall down; I will undertake to say that some which I have seen are in as bad a state of repair as it is possible for that class of work to be, and be standing.

2567. Passing from the weirs, did you find some of the reaches of the river being silted up?—The whole of the reaches above Staines have more or less silted up; a larger growth of weeds, we understood, had taken place; the river from its neglected condition is altering its course, in the way that rivers left in a state of nature will alter their course; that is, the current is drawn on one side; it makes a vertical wall and undercuts the ground, and then large sections, from a yard to two or three yards in width, fall in to be gradually swept away; and as long as that condition of things remains, you have a shoal made on one side, you have deep water formed on the other, and this wasting or making of land takes place.

2568. To the entire destruction of the navigable channel, and of course also to the decrease of the purity of the water?—And also to that extent to the decrease of the purity of the water.

2569. Mr. *Acland.*] To that extent?—To that extent you have the water muddied by the falling in of the land; you have it muddied by the production of shoals, forming mud banks.

2570. Mr. *Reilly.*] When the banks are undermined, and carried down in the stream, that muds the water, produces a mixture of earthy matter with the water?—Yes, but the most injurious effect is leaving the shoals on which effete matter is entangled in the weeds, and that putrefying under the summer sun or in the atmosphere, tends to corrupt the water more than the falling in of the banks.

2571. That is the remote result?—Yes, and it is a continuous result.

2572. In the course of your examination of the river, did you investigate the condition of the towns and cities on the banks, beginning with Oxford?—Yes.

2573. Did you form any opinion as to the effect on the sanitary condition in the suburbs of Oxford of the floods of the Thames?—The floods of the Thames, in my opinion, affect the lands in the suburbs of Oxford in a most injurious degree, and I think it would be very easy to make a Rule-of-Three sum of it; supposing it to be necessary to remove these floods, to prevent them rather, to buy up all these mills (because it is the mills which cause the flooding), and then make a Rule-of-Three sum, take the value of the mills, and take the value of Oxford and the property on the one hand, and the value of the land flooded, permanently injured, on the other, you will find that improvement is most loudly called for on every principle, and even on the economical principle.

2574. And the works which would be necessary for effecting those improvements would be beneficial to the navigation at the same time, would they not?—I believe

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—I believe that the locks and the weirs in the channel may all of them be so improved as not to diminish the value of the mill property for mill purposes, but to very much increase the value of the adjoining land, and to entirely prevent that injurious surface-flooding and those winter floods, and that amount of water-logging which exists during the whole of the rainfall.

2575. Is it not the case that the banks of the river much below Oxford have a subsoil which admits the water freely from the river when the water is backed?—Yes, that is proved by the Oxford Waterworks; Oxford is supplied by waterworks, and the engines and pumps are fixed on the margin of what we term technically a side cutting—that is to say, it is a large open space of ground, out of which the Great Western Railway took material to form that part of the bank, and especially to get gravel for ballasting, and the water in that lock or reservoir rises and falls with the rise and fall of the water in the Thames adjoining, showing the subsoil connection.

2576. That is rather above Oxford?—It is below Oxford.

2577. The railway is below Oxford?—Yes.

2578. That is the general character of the subsoil in that district immediately adjoining the Thames?—Yes, it follows the level of the Thames.

2579. And therefore it might be, might it not, that pieces of land might be thoroughly water-logged and flooded under the subsoil by the effect of the Thames, and yet not flooded on the surface?—Quite so; and that is generally exhibited in the character of the vegetation; a farmer will tell you by the surface vegetation whether the subsoil is permanently water-logged.

2580. Can you explain how it is that Sandford Weir backs the water up to Oxford, notwithstanding another weir intervenes. Is it not the case that Botley Weir is on the main branch, but there are other branches which, as it were, turn Botley Weir, and through those the water is backed to Oxford?—I will not undertake to explain it; I did not think it necessary that I should minutely inform myself of all the tributaries and branches that run through Oxford, and, therefore, I will not undertake to explain the effect of those minor branches; it is the fact that Sandford Mill works the greatest amount of mischief; but it has, as it were, the company of the others.

2581. Sir *G. Bowyer.*] You are aware that some persons hold the opinion that that same lock at Sandford ought to be got rid of altogether?—As to Sandford Lock, if I held property in that district, and were resident in Oxford, I certainly would subscribe my moiety, or my portion, to purchase it; I would be master of it, and if the lowering of it sufficiently did not prevent the evils which the land and the city now suffer from, I would remove it bodily; I would sacrifice the mill entirely.

2582. Mr. *Reilly.*] You observed, of course, that the whole of the Thames was seriously polluted by the sewage from these towns?—At present I do not know one instance, excepting that of a private individual, where any attempt is made to prevent the sewage finding its way into the water of the Thames, if it is situate, naturally, so as to fall there.

2583. You think that public bodies who exercise sewage powers on the banks of the Thames, should be put under some restriction, as to allowing the sewage to go into the river?—If the Thames water is to be taken by the water companies, as at present, and pumped into London for domestic use, in my opinion it is absolutely necessary, as quickly as possible, to prohibit the passing of sewage, as sewage, into the waters of the Thames; at present the whole of the sewage of Oxford and the other towns named, and the entire of the sewage of Windsor, which is a drained and sewaged town, and is a sample of what the other towns will be shortly, goes out in one whole block, two yards wide and a foot deep ordinarily, bodily into the Thames.

2584. Captain *Vivian.*] Reading is the same?—Reading is the same; there is a population of 800,000; it is impossible to say how much of the effete matter of that 800,000 gets down? there is no other way for it; it is absorbed into the subsoil, or passed down into the river direct; there are cities, boroughs, towns, parishes, and hamlets on the Thames and its tributaries, in number 1,001; there is a population of 888,088; the number of cities, boroughs, and towns with a population of 2,000 and over, out of this 1,001, amount to 89; that is upon the Thames and its tributaries.

2585. Mr. *Reilly.*] You have been asked a question about Reading; there is a special

a special paragraph in your Report, page 16, as to Reading, beginning with the words, "At Reading a system of cesspools still prevails"?—Yes.

2586. In your opinion is that paragraph correct?—It is.

2587. Have you any explanation to offer to the Committee further upon that paragraph?—Reading cannot remain with its cesspools; the question has been mooted before the Town Council, and it must be mooted again; it is quite impossible that a civilized community can rest with a system of cesspool sewage; and, therefore, if it is to be sewered under the present condition of things it must sewer into a tributary of the Thames, as Windsor does, excepting the law provides another means of getting rid of that sewage, and makes it imperative that it shall be so got rid of.

2588. Reading is at a very short distance indeed from the Thames?—Close to it.

2589. And that part of the Kennet that extends from Reading to the Thames is under the jurisdiction of the Thames Commissioners, is it not?—That I do not know; the Kennet is exceedingly foul, and there are many nuisances; there is much sewage matter that goes direct into the Thames from Reading now, or from the suburbs.

2590. Are you of opinion still, that sewage in the case of Reading, and the other cases in the river, may be disposed of without being sent into the river in a way that will be beneficial to the towns, and to all parties?—The whole of the sewage of Reading may be applied to land in such a manner, and under such conditions, as to entirely deprive the sewage of all injurious properties of sewage, to clarify the water, and to take out the salts of sewage, and that effluent water may come back again purer than the water of the Thames into which it is going.

2591. The subject is very fully treated of in your Report?—It is; I was at Worthing on Monday, and there is a resident population of 7,000; there is not a cesspool in the place; the whole of the population, rich and poor, use water-closets, but with the true sewage of the town of Worthing, which stands on the chalk, there is mixed a considerable volume of spring water, which finds its way daily into the sewers and dilutes it very much, and that sewage being pumped fresh (and this I wish to explain particularly) or utilised fresh, that is, the sewage of this morning, if it is put on the land this evening, never developes the noxious properties of sewage; it never stinks, nor is it offensive, and it is not in a condition to breed disease, nor is it in a condition to have an offensive look.

2592. It has gone through some chemical process, I suppose?—It has no time for putrefaction, and when it is put on the land in that condition you have it in a state which is not offensive, and you get large results from it.

2593. I suppose there would be a process of putrefaction going on if it was retained in a reservoir for any time?—If you set up a system of tanking sewage, and large sums of money have been expended all over England in different places in setting up tanks and disinfecting apparatus; but if you turn sewage into tanks and once allow it to remain in those tanks until putridity has set in, so long as you use those tanks you will have a putrid sewage and nothing else; it is exactly the same process known to old women in the north of England in making oat-cake; this process goes on—they will bake leavened bread for years and years, for 20 years, out of an earthen vessel that is never washed; the fresh oatmeal is put in and mixed up, the portion left adhering to the sides of the vessel is quite sufficient to carry on the fermentation, and that is carried on for years; now, it is a very important question, for in managing sewage works if you make tanks, and the Metropolitan Board have fallen into the error of making tanks for their sewage, if you once set up putridity, it has that extraordinary power of carrying the principle of fermentation into the whole body of the sewage, and you have putrid sewage, and therefore you have putrid sewage everlastingly to deal with.

2594. You would have it applied to the land immediately?—Yes.

2595. Have you any specimens that you wish to show to the Committee, the result of these operations at Worthing?—Yes; this is the sewage of Worthing (*handing a bottle*), which has its share of effete matter of 7,000 or 8,000 people in it; it does not look very dirty, but you will see the feculent matter in it; this (*handing another bottle*) is the effluent water taken at the same time; when it has once passed over the bay of land there is the power of passing it over two or three times; I went down and saw it on Monday, and the effluent

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water coming off those fields was far brighter than this, but this has been sent up to me this morning.

2596. The water coming off in that state is not noxious?—Some persons go so far as to drink it.

2597. In some places it would not be possible to carry off this sewage by mere gravitation from the towns?—It may not; towns may be so situate that they cannot get land in favourable positions for gravitation; in such cases pumping by steam power must be resorted to.

2598. And that is the plan adopted at Worthing?—And that is the plan adopted at Worthing; the whole of that sewage is pumped regularly and daily, and last year the whole sewage of Worthing was passed over an area of 25 acres, and it produced in grass 1,000 *l.*

2599. Sir *G. Bowyer.*] I do not understand that passing over; how was it passed over?—This sheet of paper may be taken to represent the 40 acres of land.

2600. Mr *Acland.*] You said 25?—We only used 25 last summer; but there is one block or field, this sheet of paper may be considered the shape of it, which contains 42 acres; the sewage main brings the sewage diagonally to the highest point, and delivers it into a tank about two yards square at *this* point (*describing it*); there is a main laid parallel with *this* fence; the whole of that land sheds down *this* way; there are three main carriers parallel to the length of the field; there are outlets in this top pipe, and the sewage can be turned at any one or more, and made to traverse this intervening bay of land; it then falls into an open carrier, and it can be made to traverse the second intervening portion; then it falls into a second carrier, and can be made to traverse the third, and there is a lateral watercourse parallel with this fence which finally takes it off to the sea; but although that water is so bright, as you see it in that bottle, there is plenty of manure in it to pay for putting it over another bay of land; the company have bought another 40 acres of land at a lower level in this valley, and they will ultimately irrigate that 40 acres with that water, after it has done duty more or less on this land.

2601. Mr. *Reilly.*] Those works are carried on by a company?—It is a private company, of which I am the principal proprietor.

2602. Captain *Vivian.*] What steam power have you?—It is the steam power which pumps the water for the Worthing Waterworks, about 12-horse.

2603. The lands are very fertile, I suppose?—The first crop of grass taken off last summer was more than 20 or 25 tons to the acre, and sold for 1 *l.* a ton.

2604. Mr. *Reilly.*] Is that grass good and sweet?—Most wholesome; many scores of analyses have been made of the grass, and the milk and butter, by Mr. Lawes, and it is perfectly good and sweet.

2605. Colonel *Napier Sturt.*] Did your hay fetch 1 *l.* the ton?—No, the green grass; they sell it at a shilling a rod.

2606. Eight pounds an acre?—Yes.

2607. Mr. *Reilly.*] How many crops did you get?—Five were taken off last year.

2608. All as good as the first?—No; they never will be again until the ground is broken up and resown; the Italian rye grass is a biennial; you may have a crop for three years, but every crop deteriorates; every crop is less than the crop previously.

2609. You would have a rotation at different parts, and the land you would employ for the reception of the sewage at different times?—Yes, that is necessary.

2610. Captain *Vivian.*] This system of yours is peculiarly adapted to Worthing, because of the fall in the land?—No; there is no class of land, from the blowing sands of Edinburgh down to the deepest clay, which is not benefited by irrigation.

2611. I mean from the lay of the land?—That is of very little consequence; if it was the shape of this, you would pump it at this point; you would run gaps round on the common level.

2612. Colonel *Napier Sturt.*] But suppose it is a dead level?—Then you have far less difficulty, because then you make your carriers on the surface, and throw it out on any point you want.

2613. Mr. *Acland.*] Is it your opinion practically in England you need not consider

consider the question of dead levels, that is to say, is there not in almost all cases in England some fall?—Yes; what appears to the eye a dead level, you find very often varies considerably.

2614. Captain *Vivian.*] If the town you are about to drain stands at the bottom of a hill, it would require a great deal of steam power to pump the sewage up to the top of the hill?—Not a great deal of steam power; Lord Essex pumps the sewage of Watford up 150 feet, and I may state at Croydon at present the local Board irrigates or has the power of irrigating 290 acres of land, and it goes on by gravity.

2615. There is no pumping at Croydon at all?—No.

2616. Sir *G. Bowyer.*] Do you consider that clay land is well adapted for the reception of sewage?—At Croydon there are two classes of land in use, there is the gravelly sub-soil; and at South Norwood it is the London clay, the stiff clay, and which has now been in operation, I think, for three years; the surveyor reports to me that the results from the clay land are quite as good as from the gravel, or, if anything, better; and you will find that we have stated in this Report that clay land is equally adapted for the purification of sewage and the purification of rivers better than the gravel; my colleague, Professor Way, will explain that.

2617. Mr. *Reilly.*] There are two or three lines at page 13 of the Report, which I wish to refer to. "In some respects, indeed, a heavy clay is even more suitable than lighter soils; from its very nature it is more productive of healthy vegetation, and from its well-known chemical properties, it is more effective in the purification of sewage"?—Any question with reference to that, Mr. Way will answer better than I can.

2618. You consider that sewage may be utilised in this way without the works causing any nuisance to the inhabitants of the neighbourhood?—Most unquestionably.

2619. Did you visit the Craigentinny Meadows, near Edinburgh, in the course of your investigation?—Yes; a portion of the Craigentinny Meadows has been irrigated for two summers, and other portions for periods varying from 60 years down to 30 years.

2620. There is no appreciable nuisance created by that application, is there?—Very great complaints have been made as to the nuisance of the meadows at Edinburgh, very loud complaints, and investigations have taken place; the mode of irrigation at Edinburgh is not one to be imitated, and for this reason: the Edinburgh meadows never were laid out on any principle; the owners of the soil are under no sort of restriction; they have acquired a right to the sewage by user from time immemorial; it comes down in the form of putrid sewage, that is to say, it comes down from the foul sewer of deposit from the overflowing of cesspools and other receptacles in and about Edinburgh, literally black, putrid sewage; it comes down to what is termed the Foul Burn, a large, open natural watercourse, and it goes on by means of large open ditches, in which putridity is allowed to set in; it continues neglected, and it is sent by those large open carriers over the land, and the smell that is observed is from those open carriers, and not from the land.

2621. Sir *G. Bowyer.*] Do you consider that putrid sewage is more or less beneficial to the vegetation than the other sewage?—That is a chemical question which I must decline to answer; but from all I can learn, you get as good results, and, in fact, better, I think, because I know from my own knowledge that if a large dose of putrid sewage were put upon a meadow it would kill the grass; grass is very frequently killed by it.

2622. Mr. *Reilly.*] The instance at Edinburgh is not one that militates at all against the general merits of the system; is that your view?—That is my view; but even there why complaints are made against the method of irrigating those meadows was on account of an investigation which was held at Portobello Barracks, which were supposed to be influenced by the smell from those meadows; I may remark that I am a member of the Commission on Barracks and Hospitals of the British Army; an investigation was made as to the health of the troops in those barracks, and whether it was in fact affected by those meadows; and the result was that they were proved to be some of the most healthy barracks in Scotland.

2623. Notwithstanding that the mode is very clumsy and inefficient for the distribution of the sewage?—Yes.

2624. Before we pass from that question of the utilisation of the sewage, are

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you clearly of opinion that the sewage may be applied in that way profitably to those who apply it?—I should not like to adopt the word "profitably" without explanation, and I should like to say that guardedly; what may be profit and what may be loss would in a great measure depend upon the contingent circumstances and upon management; for instance, the Croydon Board pay from 4 *l.* to 5 *l.* an acre for land that was not previously worth more than 30 *s.* an acre; they farm it profitably; they have let it to a tenant, and he, I may use the word, wisely will not tell anybody what he does make from it; therefore there is no means of getting to know what is the gross income from the Croydon meadows.

2625. Sir *G. Bowyer.*] Then, if I understand you, they have let the land to a tenant of their own, although they are paying the ground rent?—They took it on a lease of 14 years; they pay fr om 4 *l.* to 5 *l.* per acre; they have 290 acres; they were forced into the bargain by a Chancery suit; the Chairman of the Local Board, Mr. Cuthbert Johnson, a gentleman well known to the agricultural world, and the surveyor, who is as intelligent a man as any I ever met with, Mr. Latham, have gone into the calculation; their lease is running out, and rather than renew it at an extravagant cost they are prepared to put down engine power and lift that sewage 150 feet, and go further afield, five, six, or seven miles, to get land at a cheaper rate.

2626. What do you call an extravagant cost?—If 10 *l.* or 15 *l.* an acre is put on them.

2627. If 6 *l.* or 7 *l.* is put on you would not consider that an extravagant cost?—They would renew the lease, I think, at the present rate of payment.

2628. How soon does land become very profitable by the application of sewage?—I am not a farmer. With regard to the Italian rye grass, the first crop of it, I believe, comes up in three or four months; the Worthing grass was sown in the winter previous, and the first cutting was in May; as I say, it was upwards of 20 tons to the acre.

2629. Then the advantage to the land accrues immediately on the adoption of the system?—Immediately; that very year.

2630. Mr. *Reilly.*] The pecuniary result of the proceedings at Worthing are stated at page 15 of the Report?—Yes, as far as we could get them.

2631. There you show a balance of 16 *l.* 13 *s.* per acre for rent and interest on the outlay?—Yes; and on that I may say, as in all new works, there was a good deal of what I may term muddling; the thing was not done as well as it might have been done at Worthing.

2632. You had to try experiments, and some of them failed?—Yes; contrary to my wish, they would lay down a mile of earthenware pipe, for they carry the water under pressure; I directed them all to be taken up again and cast-iron put down.

2633. I believe at Worthing the local Boards are forbidden draining into the sea by Act of Parliament?—No; they claim to have the right of using a stream known as the Teeville Stream, which passes into the sea; but the nuisance was becoming so great that they were threatened, through the common law of the land, by the adjoining landowners with actions; and they would inevitably have got an injunction in Chancery made against them for fouling that stream if they had gone on.

2634. The Croydon Board adopted their scheme under similar pressure?—They were forced into it by litigation by the millers and riparian proprietors situated on the stream below the outlet works.

2635. But they do not regret having been forced into it?—Not at all; their only regret is, that they spent so much money in attempting to purify the sewage by precipitating operations and in defending these Chancery suits.

2636. Lord *Eustace Cecil.*] With regard to the utilisation of sewage, are you aware that the admixture of sewage in the first instance with earth is more profitable than the admixture of sewage with water; in point of fact, if you mix sewage with water, does it not lessen the value of the sewage generally rather than if it were mixed with earth?—I hardly understand the purport of the question.

2637. The purport of the question is whether the admixture of the sewage in the first instance with earth would make the sewage more profitable than if it were mixed with water?—You mean upon a principle similar to that provided for by the earth closet, or whether a system of water closets by the use of water would be more profitable.

2638. Precisely?—

2638. Precisely?—I have had no experience of the use of earth-closets.

2639. Have you had any communication with the Rev. Mr. Moule, Rector of Fordingham, in Dorsetshire?—Mr. Moule was examined by myself at considerable length, and his evidence is to be found at page 290 of this Blue Book; I may say, in passing, that the earth-closet I look upon as a thing to be used exceptionally where the soil pan or water closet is not capable of being introduced; for this reason, intervening labour must come in to make the earth closet available; you must have by hand the necessary soil carried in, and you must have it carried out, and therefore you have human agency brought to play upon an operation which, if neglected, would create a great nuisance; if you have two or three water-closets in your own house, the simple operation of pulling the valve-handle—if the water-closet and the sewers are properly constructed—frees you from all further trouble; if you substitute the earth-closet in all those places, some of your servants must see to bringing in the soil, to taking out the soil, and to manipulating it by hand at all the intervals of time necessary.

2640. Are you aware that a system of earth-closets has been put in force in the town of Sheffield, or not?—I am not.

2641. Colonel *Napier Sturt.*] And in the barracks at Brighton?—I am not; but if they are in operation there, I have no hesitation whatever in predicting that they will fall to the ground if brought into competition with water-closets, where there is a water supply.

2642. Lord *Eustace Cecil.*] Do you not think the system of carting at certain periods could be adopted, either by manual labour or by some such other machinery?—If you could imagine London given over to earth-closets, you would have several millions of tons of earth brought in every year, and several millions carted out every year, and then you would have manual labour multiplied by many millions of distinct operations; and what it would tend to, I really cannot foresee.

2643. You do not believe in the greater value of the sewage when mixed with earth than with water?—Certainly, not near as much; my own opinion is that if sewage is taken at the outlet, and is applied direct upon the land, that you have as much value as can be got out of that mass of sewage, and if the earth-closet does anything (and I speak again under correction of chemists, who know the action better than I do) I think it must waste some of the contents of the excreta by oxidizing, or evaporating, or converting it into some other form, or getting rid of it; I cannot say, I am not sure.

2644. You do not know that any experiments have been made on the subject?—I do not; I believe the earth-closet system to be a very good one and a very beneficial one, when you can get nothing better; but I do not believe in it for entire communities, and certainly should be very sorry to substitute earth-closets for water-closets.

2645. Colonel *Napier Sturt.*] Have you heard that the system has been tried with great success throughout the Presidencies of India?—I am a member of the Barracks and Hospital Commission, and we have had such reports.

2646. Favourable to the scheme?—Yes.

2647. Mr. *Reilly.*] It seems to be advocated by some of the medical authorities of India, according to the evidence of Mr. Moule?—Where you can get nothing else.

2648. That is the substance of the observations made of Mr. Moule's system in the Report, at page 15?—Yes.

2649. You observe that it may be advantageously employed in the case of isolated houses?—Just so; in fact, the earth system is the principle that was set up during the Crimean war, in the camp; we had not the closet apparatus, but a trench was dug in the ground, the latrine box was placed on the edge of it, and an orderly was told off to sprinkle a certain portion of earth every morning over the excreta, and then, when the surface was brought within a certain point of the natural surface of the ground, the hole was to be filled back again, and a fresh pit dug and the same operation repeated; that was done, and done successfully.

2650. That is very well when the simple object is disinfection?—When it is simply wanted to get rid of the material in that way to prevent its corrupting and putrefying.

2651. But any process of merely carrying away the excreta of a large popula-

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tion like the City of London in that fashion you think would be impracticable?—Nothing is impracticable; I think it would be a far more costly work, and much more of a nuisance, and much more disturbance of family comfort; the streets would be blocked up with traffic; that we do not want.

2652. Mr. *Acland.*] I understand your objections to the earth system turn on two points, one of which is the difficulty of carrying out any theory upon the subject, and the other your general view of the cost of transport; confining my question to the second point, have you made any estimate of the cost of the transport or removal, in the one case and in the other?—No, for this reason: supposing London was given over to the earth system, I connot tell how far they would have to bring the soil, or where they would get it from, or how far they would have to take it; the area of London is so enormous that the cost of transport, for it must be carted, would be very great.

2653. Applying your general knowledge, or that sort of instinctive judgment which an engineer in practice gets in time, are you able to state at once that the cost of removal of any amount of excrement which might be locked up in earth would be more expensive than the removal of the same matter in a liquid form?—I believe it would be very much greater; and I can give an approximate idea, because in Liverpool, Manchester, and Lancashire towns generally, water-closets are now common amongst the cottages; there is a privy and a cesspit, and the ashes of the fires are thrown into the cesspit; the soil from the inhabitants falls down and mixes, and those places are emptied by the Corporation of those two great towns and removed; the annual cost in Manchester is from 18,000 *l.* to 20,000 *l.*; the loss upon the transaction is about 50 per cent.; it costs from 9,000 *l.* to 10,000 *l.* a year to move the contents of those privies, and then they are removed after they have worked the greatest amount of mischief that putrefying matter is capable of working.

2654. Are you able to state with tolerable certainty that the expense of that removal would be diminished if it were taken away in a liquid form?—Taken away in a liquid form it costs nothing.

2655. When you say nothing, it surely costs at least the interest of the money laid out on the drains?—I do not think you should put it in that way, because the first question is, are drains necessary for other purposes; are they necessary for removing the slot water of the houses, the surface water of the roads and yards, and the surface water from the roofs of houses; sewers and drains I look upon as an absolute necessity for any congregation of civilized men in communities, towns or villages.

2656. Must there not be other appliances of the same kind if the habits of those towns were changed from the removal of the soil in a solid state to its removal in a liquid state?—You would simply change what is now a cesspit and a privy into a water-closet; the first cost of that change would be covered by three or four years' removal of the contents.

2657. You are enabled to state, quite broadly, that the cost would be very much diminished?—Yes.

2658. Then I understand that over and above the comparison of cost between the removal of solid and liquid, that you entertain the strongest opinion as to the practical difficulty of carrying out the solid plan?—I do, knowing how liable human invention is to run into neglect; take, for instance, the operation of removing the dust of London: when we are told that it is not possible to carry out the system of water-closets in towns and villages, you have London, the largest city in the world, a water-closeted city; you have water-closets in London not by hundreds or thousands, but by tens of thousands; just as you have removed the cesspools and as you have substituted water-closets, and with very imperfect apparatus for carrying out the principle, there are thousands of miles and miles of tributaries to sewers in London now which are nothing but sewers of deposit into which refuse goes and putrefies; yet, just as you have carried out the principle, you have improved the health of London; the Registrar-General shows you year by year that you have made London now the healthiest great city in the world; it has an average mortality of about 23, Manchester about 30, which last year has gone up to 40 and 45; then, with regard to the difficulty of carrying away the solid matter, the refuse is taken away by dust-carts; any person who pays any attention to his own residence finds that there is a liability for the dust to accumulate, and for the vegetable matter to accumulate; I do not know if honourable Members are more fortunate than myself, but I have to pay a bribe

a bribe or fee of 2 *d.* or 3 *d.* every time the dustman comes to perform his duty of taking away my dust, and I find it is far better for me to wink at the payment of that sum than to allow my dust to accumulate and the dust-cart to go by and neglect me; if I were contingent upon the removal of all the excreta from an earth-closet and the bringing of new matter in the same way, I very much fear I should be left high and dry.

2659. Whatever the theoretical advantages of the dry system over the liquid may be, you still think that the carrying out of the details is a most important consideration?—I do.

2660. Lord *Eustace Cecil.*] Do you think it is quite fair to compare the old kind of cesspools with earth closets?—No.

2661. You were talking about the health of London being very much improved in consequence of water-closets being used instead of cesspools?—Yes.

2662. The earth-closets, as I understand them, would naturally destroy the nuisance arising from the old cesspool?—So I understand, and I understand that the change by mixing the soil with earth is most marvellous; Mr. Moule goes so far as to say that you can redry the same earth four or five times over; if you will look at the process of redrying the soil by the servants a little consideration would show the impracticability of it; I should like to know what servant would like to be told off to look after these earth closets, and to manipulate and perform all these arrangements which are so necessary to their success.

2663. As to the mitigation of nuisance, if I understood you rightly, you said that in Edinburgh one of the open drains there was very offensive?—All the open drains are offensive.

2664. If you have a system of very clean sewage, I suppose that would be prevented entirely in any large town?—I suppose it would, but the getting rid of the nuisance to Edinburgh would be the merest trifle of cost.

2665. That nuisance arose from the meadows where the sewage was applied for the purpose of utilisation?—Quite so; it is the open houses that are left much fouler than they ought to be that cause the nuisance.

2666. You expect that the nuisance would not necessarily be caused if the houses had been constructed in a proper way?—Just so; I may say also that we have had complaints of the nuisance with regard to the irrigation of Croydon; some of the residents on the adjoining estates complained; we found in that case that that was not necessarily from the process of irrigation, but it was owing to the neglect that crept in; some of the carriers were allowed to get foul, and very probably the sewage was not changed sufficiently from one surface to another, and we generally found that the sewage was more complained of during the active time that the men were working when the grass was growing very rankly, and that it came from sending the water down in a foul state, which might all be avoided by good management.

2667. When you were speaking of the mischief of cesspools, you introduced that, as I understand, to show that it would become soon absolutely necessary for all towns to provide a system of sewage?—If the inhabitants of those towns are to have the chance of enjoying good health and prolonged life, I unhesitatingly say they must get rid of their cesspools.

2668. Cesspools injure the health of the inhabitants in two ways, by corrupting the air and by corrupting the water, do they not?—They do, if water is pumped from subsoil wells.

2669. Is not the poisoning of wells a very insidious kind of danger?—Very; take the case of Brighton, many persons go to Brighton to recover their health; a great part of Brighton is drained into cesspools; there is a water company, but it is at the will of any person to take or reject the supply; many persons have taken a supply of water from the company; there is no drainage in that district, and they have converted the wells into an absorbent subsoil; the next party retains his well, and gastric fever and other fevers are set up in Brighton from drinking the water from such subsoil; I find it in the evidence of medical gentlemen, that those fevers are caused by drinking that impure water.

2670. One man converts his own well into a cesspool, if we may say so?—Yes.

2671. And that filtrates gradually into his neighbour's well?—It does.

2672. That sort of mischief may be going on for a long time before it is detected?—Different constitutions are differently affected; one constitution may

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go on, and apparently never be injured, and another falls before it, and is carried off.

2673. Then as regards the cost of carrying away the matter which has to be removed, is there not an agreement generally that carrying it away in water is the cheapest mode?—It is; for instance, take the city of Carlisle, which was sewered some 10 or 12 years ago; there is a population of about 35,000; the closets are in connexion with the sewer; the sewage is used at the outlet of the sewer; there has not been 5 *l.* expended below the surface upon any of those sewers or drains since they were first put into operation; the water is pumped in by the company; it is supplied to the houses, it passes through the closets; it flows down into the drains, and goes on to the sewers, and within 48 hours of any refuse passing from any closet in Carlisle, it is at the outlet.

2674. Sheffield has been referred to as a place where these earth closets have been introduced; do you not know from your official experience, that there is a great supply of water to Sheffield?—I know that Sheffield is in the throes of a sanitary change; it is in what we may call a new birth of sanitary life; it is not sewered at present.

2675. Are there not many water-closets in Sheffield, to your knowledge?—Yes; to the hotels and best houses.

2676. Is not the system being extended by the Local Board of Health?—I believe so.

2677. Mr. *Acland.*] I think you are the officer of the Privy Council in connection with health, are you not?—I am the engineer for public works in Lancashire.

2678. Are you not the habitual adviser of the Privy Council, in matters connected with engineering, that affect health?—The Privy Council have no jurisdiction over engineering matters; the Privy Council take cognizance of the medical part of the subject, and their officer is Mr. Symons; I am chief inspector of the government, under the Local Health Act; I take cognizance of all questions of sewerage, drainage, water supply, and town improvements; the Privy Council have nothing to do with it, it is the Home Office.

2679. In connection with the Home Office, your attention is habitually called to these questions?—Constantly.

2680. Sir *G. Bowyer.*] Are you of opinion that the adoption of a good system of sewage, such as you have described, increases the value of property in any town?—I am absolutely certain of it; it is difficult to get direct evidence; take Worthing as an example; before the main sewers and the water supply were carried out in Worthing, the place had become deserted as a watering place, it was stagnant as regards building; since they have carried out their works, they have had it filled regularly to overflowing, the value of property is rising, and the chairman of the Board told me that he had no doubt whatever that the increase in the value of property in Worthing and its suburbs is not less than 25 per cent., in consequence of their having carried out their sanitary works.

2681. Mr. *Reilly.*] The subject of the condition of Worthing was very much discussed in the newspapers just about that time?—It was; one hotel keeper told me that before they carried out their sewerage works, such sewer as they had went out on the beach; at particular times of the year a great portion of sea-weed is blown on to the beach, and the combination of sea-weed and the sewage was of such a horrible character, giving off sulphureted hydrogen to such a degree, and the stench was so intolerable, that he had his house emptied from the basement to the garret one afternoon, when the wind set in from a particular quarter; all the visitors went away from him as fast as they came.

2682. Sir *G. Bowyer.*] Is there not a general opinion in the country, and probably an increasing opinion, that a town which has not a thoroughly good system of drainage, such as you have described, is comparatively unhealthy?—I think all persons of intelligence will very quickly find that it is by far the most expensive process to live in the midst of filth.

2683. *Chairman.*] The clear bottle which you have produced is water through which sewage has passed?—I do not give it as an example of pure water; I simply show the altered condition.

2684. When it has gone over land a second time, would it become purer, and safe to drink in the end?—I should never myself advocate water for drinking purposes that had ever been sewered; I think any chemist would state that that would be a very dangerous proposition; and that question, as it affects the Thames,

Thames, is one of the most important questions that this Committee will have to consider; when you have once admitted sewage into water, there is no method of getting rid of it effectually other than by evaporation.

2685. Mr. *Acland.*] I think you have stated that you have watched this question a good many years; is it not the case that a few years ago very great doubt was entertained by very competent judges as to the possibility of making sewerage profitable, or in any way more advantageous than as a deduction from the cost of cleansing towns; if that be so, do you think the question has made great progress within the last few years?—I think very great progress; for instance, I was one of the first inspectors appointed in 1848; I held inquiries where the opposition was of a most violent character, where the introduction of the Act was resisted by every argument that man could bring to bear against it, and especially the argument of cost; it was assumed that the districts would be ruined by the cost of the works, and exaggerated statements were made, for instance, at Carlisle; the city was polled in sections and wards; a statement was made that if these works were carried out, the rates would be increased to 10 *s.* 6 *d.* in the 1 *l.* for sewage works proper, but the estimate showed that the rate to pay the interest of the money and to repay the capital would not exceed 6 *d.*; I saw the clerk of the Board last week, and he has informed me that a 6 *d.* rate has paid the whole of the sewer's rate, and has repaid the necessary portion of the capital up to this time, and will continue to do so; now, a 6 *d.* rate had never been sufficient to keep the streets, I will not say clean, but dirty, for they never were clean.

2686. You are speaking now of the progress of public opinion with reference to the cost of water-closets?—And the cost of sewers and drains.

2687. You think the public are much more prepared now to look at the cleansing of towns by a good system of sewage as a practical question than it formerly was; is that what you mean?—I mean that we have so many practical examples in all parts to point to, and so many years' experience.

2688. Do you think that whatever theoretical objection there may be to the value of liquid sewage that the question is now being practically solved?—I think so.

2689. You think we are passing out of the pure sewage theory to the tangible results to which we can point?—I do; I may say, in answer, that many towns which have resisted as Croydon did, and which have expended large sums of money in law, are now turning round; deputations are going down to Worthing, Croydon, and Carlisle, and other places, to look at these works, and they are inaugurating works of a similar character; there was only last night a deputation from Chorley, in Lancashire; they are going to carry out sewage irrigation works; Leamington, Warwick, Cheltenham, Banbury, and certain other places, are all of them going to carry out sewage irrigation works.

2690. Mr. *Reilly.*] The movements may have been quickened, no doubt, in those cases by the legal proceedings which were threatened, and taken in one instance?—Just so.

2691. Sir *G. Bowyer.*] Are you able to give us any opinion as to the sanitary state of the city of Oxford with reference to the sewage question?—I can only give an opinion obtained from my examination of Oxford, and from the evidence I received at Oxford, which is embodied in this Report, and that is that Oxford is at present in an unsatisfactory state; such parts of Oxford as are sewered pour the contents of these sewers into the nearest water-carrier; there are many privies in Oxford situated on the edge of these tributary streams, and the effete matter falls direct into the water; a great portion of Oxford is situated upon cesspools, and those cesspools are doing great injury.

2692. Those streams themselves must occasion mischief?—One of the learned gentlemen who appears before this Committee, Dr. Adams, has said in his evidence, which we have copied in our Report, that Oxford commits a great outrage upon the streams on which it is situate.

2693. There are very often bad smells in Christchurch Meadow, are there not?—Yes.

2694. Can you give us any opinion about Reading?—Reading is polluted in the same way as Oxford; a great portion of the place drains into cesspools; those cesspools do one of two things; they do this certainly, they render the sewage putrid, and consequently injurious in the highest degree; sewage can be made of the subsoil, and either absorbs this putrid matter, or there are overflow

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drains by which it finds its way into such sewers as they have, and into the river; it does one of two things: it either corrupts the subsoil, which is gradually growing worse, or it corrupts the river by the overflow passing in.

2695. And the river, instead of being a source of health, is becoming quite the contrary to the town?—It is; they are not only doing injury to themselves, but they are committing a mischievous and criminal injury upon the inhabitants of London.

2696. Mr. *Reilly*.] The result of your investigation as to Oxford, is to be found in page 16 of your Report, is it not?—That is so.

2697. You held some local sittings of your inquiry into the subject at Oxford, and you had the advantage not only of the evidence of my learned friend, Dr. Adams, but also the evidence of Mr. Downing, Sir Benjamin Brodie, Dr. Rollestone, and Dr. Acland, who has distinguished himself by great attention to the subject?—And the Dean of Christ Church.

2698. You went thoroughly into the whole subject of the sanitary condition of Oxford?—We sat, I find, eight days.

2699. Sir *G. Bowyer*.] How is the sewage of the Colleges of Oxford disposed of?—I think it gets out into the nearest stream, or into some local cesspool.

2700. Does it not appear that Oxford is sewered direct into the Thames?—Such sewers as are in existence pass their contents directly into the Thames or some of its tributaries; and the mills, if they have any overflow, also pass their refuse into some of the tributaries.

2701. Mr. *Reilly*.] Was not evidence given before you by some of the gentlemen resident at Oxford, of their experience of the state of the river, which they represented as having been sometimes in a most disgusting condition?—Dr. Rollestone speaks, in his evidence, of going out in his natural history pursuits, and, as he was collecting his specimens, being offended by solid effete matter, and not wishing to go out with ladies in a boat on account of their attention being directed to such things; and Dr. Acland speaks of the water growing so much worse, that, formerly, when they were out in boating parties, they did not have the slightest scruple in drinking the Thames water down below Oxford, but recently it has made them sick; and we had the same evidence at Reading.

2702. That was not only evidence as to the effect of sewage, but did it not appear that there were collections of carcases of drowned animals, and other objects of that kind?—Yes; through the whole course of the river we found the river was rendered impure by a total neglect of what I would term scavenging; that is to say, with regard to drowned animals, whether they got accidentally in or were purposely thrown in, it was no person's business to remove them; if a carcase is once in the water it floats to corruption or to absorption; we had evidence that some parties did take them out; but when I inquired of the millers, "When these carcases come home to you, what do you do with them?" I received this reply: "We send them on to the next; we push them through the weir; we do not take them out." I speak practically on this point, that all water carriers, whether rivers or canals, are liable to this form of pollution; they are liable to dead animals getting in, and, if it is no person's duty or business to remove those animals, they naturally float to corruption; but it is very simple indeed, if a system of scavenging is set up, to prevent that kind of thing; the persons whose duty that would be we term bank rangers on the canal; I do not know what Mr. Leach may call them when he gets the Thames under his charge; but it would be their duty when they saw a carcase floating to remove it, and the process is very simple; a man carries a line in his pocket, such as a piece of whipcord, and a bullet at the end, and if the carcase is lying where he cannot reach it, and he is not in a boat, he throws his line over and draws it in, digs a hole at the side, buries it, and gets rid of it.

2703. I will read you a question or two from the evidence of Dr. Acland, who brings this point prominently before the Commission; he is asked, "Are there not drowned animals, dogs and cats, left floating about upon the water near Oxford?" his answer is, "The last time that I pulled my family down I counted no fewer than the floating carcases of six dogs between here and Iffley." Iffley is a very short distance below Oxford. The next question is, "I need not say that if that occurs in the summer time they are likely to be very offensive?" to which Dr. Acland replies, "Just so, and they were so offensive

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on this occasion that my party declined to go another time." There is a great deal in the evidence as to the condition of the river in the immediate neighbourhood of Oxford in this Blue Book?—I made a minute inquiry with reference to that very statement as to this neglected state of the river, so that I found that it prevailed through the entire area.

2704. That is independently altogether of the pollution from the sewage?—Independently altogether of the pollution from the sewage.

2705. That process of scavenging which you have described as being applied to getting rid of these carcases would be a very serviceable thing to the water companies, would it not?—It is such a duty as ought to be certainly imperative.

2706. And the water companies would derive great benefit from the performance of that duty by the Conservators?—They would; if we are to take the evidence which is contained in the Blue Book with regard to the effect of impure water, it is very important; I hold a report in my hand which was drawn up in 1856; it was an inquiry as to the effect of drinking impure water upon the health of the inhabitants of London during the outbreak of cholera in 1854; two companies, I think the Lambeth and the Chelsea, or the Southwark and Vauxhall, supply the districts on the opposite sides: here they run parallel, they have the means of running into the same streets, and they divide the houses between them; during the outbreak of cholera several of the population had been affected similarly throughout the district; subsequently, when one company had removed its source of supply to a comparatively pure place in the river above Teddington Lock, the population drinking the dirty water suffered three and a-half times as much mortality as the population drinking the other water.

2707. You adhere, I presume, to the opinion stated in the 18th page of the Report on that subject: "It is the general opinion of medical men, that what causes the presence of organic matter in water to be poisonous is, not its quantity but its quality; and this special quality cannot, as yet, be detected by either microscope or chemical analysis, and is, indeed, at present known only by its occasionally noxious effect?"?—I do; I should state, that I will not trouble the Committee with that, because there is a Report which contains it all in detail.

2708. Be kind enough to read the titles of the Reports which you hold in your hand?—A "Report on the last two Cholera Epidemics of London, as affected by the consumption of Impure Water," addressed to the Right Honourable President of the General Board of Health, by the Medical Officer of the Board, dated in 1856; I also hold in my hand a Report, entitled, "A Microscopic Examination of the Water supplied to the Inhabitants of London and the Suburban Districts," which was published in 1850, and was made by Dr. Hassall. Now it is quite true that this Report refers to the water within the Metropolitan area, opposite to London; but I wish to read an extract defining sewage; and I maintain that this extract is as true of the matter that is sent into the River Thames from Oxford, from Reading, from Windsor, and from all the other places, as it was true of matter sent into the Thames from London; he says, "In the preceding pages the word sewage has been frequently employed; of the nature of this most persons have some general notion, but it is probable that but few have fully realised to their own minds, its actual and loathsome composition; the sewage of London consists then of the contents of the closets and urinaries, dirty and waste waters of various descriptions, the washings of our persons, and clothes; the refuse of gas, chemical, and a host of other works and manufactories, some of which are of the most unclean and offensive description, as those of bone crushers, the makers of glue and catgut, soap boilers, tanners of leather, &c.; the gore and filth of the slaughter-house, the knacker's yard, and the dissecting room; the purulent discharges, cataplasmata, and other rejecta of the sick of our hospitals. The picture is already horrid and disgusting enough without further portraiture; it is proper, however, that in a matter of so much importance there should be no concealment, but that the truth, the whole truth, fearful and tremendous as it is, should be known and publicly declared. Well, this mingled and manifold corruption, termed sewage, passes from the sewer into the Thames, and from the Thames it returns to the public. Now, this is not a mere assertion, but an undoubted fact admitting of demonstration. Thus I have shown that various matters, animal and vegetable, connected with sewage, including some of those of the fœces, are at all times to be detected in Thames

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water; and further, that the same substances exist in the waters of several of the companies as supplied to the public; the chain of evidence is complete and conclusive; thus the muscular fibre of the meat, as well as the more indestructible parts of the vegetable tissues consumed, have been repeatedly traced from the closet to the sewer, from the sewer to the Thames, from this to the companies' reservoirs, and from these back again to the public. It is thus beyond dispute that, according to the present system of London water supply, a portion of the inhabitants of the metropolis are made to consume, in some form or other, a portion of their own excrement, and moreover to pay for the privilege; now this, disgusting as it is, is absolutely true of the sewage above the pumping stations of the present companies."

2709. That Report, you say, was made before the change of the pumping station?—It was; I mean to say it is true of the sewage that goes into the Thames above.

2710. *Pro tanto*?—Yes.

2711. Sir *G. Bowyer.*] It is true now?—Yes.

2712. It is only a question of degree?—A question of degree and larger.

2713. Mr. *Peel.*] Is there any trace of sewage in the water supplied by the companies which can be detected by microscopical examination?—It is not for me to say; when it is clearly shown that you have the sewage of all these towns going in, I should decline to take any analysis, or to take any evidence that it was not impure; I would not for a moment submit to go into any evidence of that kind.

2714. Mr. *Reilly.*] I think you have already explained that a very minute quantity of decaying organic matter chemically combined with water may be exceedingly deleterious?—I have heard that opinion expressed; will you allow me to make an explanation for one moment; I wish to state to the Committee that I am not giving this evidence antagonistic to the water companies; I am not giving it with any desire to injure the companies, because I do sincerely hope that this Committee in passing this Bill will make it impossible that that form of contamination can be continued; and I sincerely hope that the companies will see that it is their interest to aid that prevention to the utmost of their ability, or I would not give very much for the purchase of their monopoly; I am not giving this evidence with a wish to damage the companies, but to benefit them.

2715. This deleterious matter, which you say cannot be detected by microscopic or chemical analysis, cannot be removed, no doubt, by mere sand filtration?—All the chemical evidence, as far as I have learned, tends to this, that mechanical filtration separates mechanical impurities; that is to say, that there are no means of dealing with the effete matter of the sewage, when it has once been put into the water, by any chemical process that has yet been tried; even chloride of iron will not do it, nor any of the other patents that have been projected; they do nothing but clarify the water, they do not remove the true source of sewage.

2716. Lord *Eustace Cecil.*] That is true of water which is run off land?—No, it is not true; the land does something different to any chemical ingredient that you can mix with the water; soil appears to do this; water in being transmitted over an acre of soil, especially if there is a living vegetation, seems to give out the salts of sewage, and if it passes through land it takes up some of the minerals of the land and changes the ingredients, but it ceases to be true sewage.

2717. But you cannot say that that water is perfectly innocuous?—I cannot say that I should like to drink it.

2718. Mr. *Acland.*] Do you mean that the water at Worthing, for instance, passes by filtering through land, and is taken out from underground drains?—No, it is a loamy soil, and we are making bricks from the same soil.

2719. Then if you do not mean that, do you mean that the water is passing over the surface of the land?—And partly into it, and dissolving the soil, and is coming into contact with the rootlets of the grass, and it is being chemically acted upon by vegetation, and by the soil; the soil and the vegetation are taking the salts of the sewage in the same process; I may explain that the water takes up some of the salts of the soil.

2720. What I want to get at is simply to ask you whether at Worthing you except passing over the land, or passing through it, or both?—That is the idea, but I do not think it goes to any very great extent into the soil, although it does to some extent.

2721. Then

2721. Then is it your view that in cases where the water only passes over the surface, and therefore amongst the rootlets and plants, that this process goes on?—That is only my view; but it is the fact that if you pass foul sewage water which flows on to heavy clay land, it goes down over an area of 10 or 15 yards, and it flows off the surface into the open carrier; at the lower end it goes on in inky black sewage at the top, and comes off bright sparkling water at the bottom.

2722. Lord *Eustace Cecil.*] You say you are forming a company to take that bright sparkling fluid, because it contains sewage?—We have bought some land upon which we shall turn that bright water; but then you have the water meadows and the spring waters without a particle of sewage.

2723. If, after having passed three times into the land, as is done in Worthing, and passed into the Thames, it will still contain a great deal of manure?—It will contain some, no doubt, but I think it would be so greatly improved that it would not remain sewage water.

2724. But it would be profitable for a company to irrigate their lands with it?—I believe so; but, whether profitable or not, I hold that the town communities ought to be compelled to resort to that mode of purifying sewage; it is our intention to make an examination of all the tributaries of the Thames, and to report specially upon them; to report on the purification of the tributaries; and to report on the possibility of providing reservoirs with the view of increasing the supply of the water companies ultimately.

2725. Sir *M. H. Beach.*] Do you think that the sewage running into the upper parts of the tributaries of the Thames would be injurious to London?—It is a thing that you can only follow in your imagination, and, as I said, I would decline altogether to go into any evidence on the question, because, if all the chemists in Europe told me that after the sewage had gone into water that there would be no injurious effects from it, I simply would not believe it; whether it is injuriously affected or not, I do not know; I am now daily drinking Thames water, knowing, as I do, all the abominations that go in; whether ultimately I may injure my health or not, I cannot tell, but I do know that all the medical men state that under certain conditions this effete matter may go on to corruption, and if it passes into my system it will do me serious injury.

2726. You think no length of flow of water can get rid of the sewage matter entirely?—It cannot get rid of the idea; whether it gets rid of it bodily or not, I am not prepared to say.

2727. Mr. *Acland.*] I wish to refer you to Question 1493, in the examination of Sir Benjamin Brodie: "It has been said that the oxidising power acting on sewage, running in mixture with water over a distance of any length, is sufficient to remove its noxious quality; do you think that that is the case?—I should say that it was simply impossible." Does that represent your opinion?—It does.

2728. You believe Sir Benjamin Brodie's opinion to be one of very high authority?—I do.

2729. Colonel *Napier Sturt.*] Therefore, the sewage of the Kennet would be sufficient to poison the water of the Thames?—In a degree; the effect of poisoning is in degree; the most deadly poison is given as a medicine.

2730. Sir *M. H. Beach.*] Holding those views, you would prefer that no sewage should be allowed to run into any river at all?—Sewage, in my opinion, should not be allowed to flow into any river where the water is to be used for culinary and dietetic purposes, that is, for human use; as to whether it shall be allowed to flow into a river which passes immediately into the sea, or into a river used purely for manufacturing purposes, I am not prepared to say; but, certainly, when you have to pump water for human use, the whole of that stream of water should be kept free from sewage.

2731. You would wish to see that extended to the whole of England, and not only to the River Thames?—The Commission of which I am a member is a Commission for inquiring into the Pollution of Rivers over the entire of England; we have reported upon the Thames; we shall now make an investigation of the Aire and Calder district in Yorkshire, and we shall report upon that; and then, if Government continues the Commission, we shall go on and report upon the Lancashire rivers and many other rivers.

2732. Lord *Eustace Cecil.*] Can you at all say how far sewage flowing into the Thames, say at Reading, would operate prejudicially to human health?—I

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have not the slightest idea, and I can only tell you that some medical men, who have paid strict attention to the subject, go so far as to say with regard to cholera, that the seed of cholera—if I may use that term—that is the material that generates cholera, is in water; the late Dr. Snow declared it was impossible for persons to have cholera except through the intervention of water; the material which generates cholera in one system must be voided into water, and must be drunk by the person affected, and then it sets up the fermenting of the blood, which brings about the result—cholera.

2733. Mr. *Reilly*.] Did not Sir Benjamin Brodie express an opinion upon that subject, in the answer to the next question to that which has already been referred to, 1494?—"Taking the case of Oxford, if the sewage of Oxford was in its entirety discharged into the River Thames, could we trust to the oxidising power to take away the noxious quality of the water before it reaches, say, Teddington."

2734. That is taking the distance between Oxford and Teddington?—Yes; I beg to say that this is a question put by our most eminent chemist, Professor Way; Sir Benjamin says, "I should say, certainly not; I presume that the sewage could only come in contact with oxygen from the oxygen contained in the water, and also from the oxygen on the surface of the water, and we are aware that ordinary oxygen does not exercise any rapidly oxidising power or organic matter."

2735. So that between Oxford and Teddington, it is clearly Sir Benjamin Brodie's opinion, that the sewage would not have lost its noxious qualities?—It is; Professor Way asks another question: "Is not an infinitesimally small quantity of decaying matter able to produce an injurious effect upon health?—I believe so. Therefore if a large proportion of the organic matter was removed by the process of oxidation, might not the quantity left be quite sufficient to be injurious to health?—I should think so, certainly."

2736. You were going to the point of the contribution to be made by the water companies; have you considered the mode in which that contribution should be made, and its amount, and, if so, will you state to the Committee in your own way what you think of it?—I have looked at in this light, that the water companies are trading companies, and their capital consists of their plant and machinery, and the material they trade with is the water of the Thames; they take that water now under Parliamentary arrangement without paying anything for the privilege of taking it; they take it in its condition, dirty as it is, impure as it is, and they find filtration, and pump it to their customers in London. Now, the machinery of this Bill is, or I hope will be, when passed, such that the Thames water will be prevented from being polluted; and I have thought that if the companies were called upon to pay a rental, such as any other trading company would pay for the privilege, 10 *s.* per million gallons would not be an excessive charge; that is, that the rate should not exceed that. I may explain what 10 *s.* per million gallons would be; there are five companies now pumping water from the Thames above Teddington Lock; I think I am right in stating that they have power to take 20,000,000 gallons each per day. I will not be sure; they have power to lift about 10,000,000 gallons each; we cannot recollect that they have supplied as much as 70,000,000 gallons per day. At present the water companies do not pay for the water taken; there are certain payments made to the Conservators; but, as explained by Mr. Leach, those payments were for money laid out, and certain other things, which cannot be called a rent on the water.

2737. It is explained that that contribution is to reimburse the Conservators for works executed to mitigate the evil effects of the abstraction of the water?—No, I think it was for works done to enable the companies to establish their works at that point; it was for rebuilding certain locks, for dredging and deepening the soil, and doing certain other things; now, take it that this rate of charge which I have put down, if one company takes 10,000,000 gallons per day, and pays 10 *s.* per million gallons, it would be called upon to contribute 5 *l.* per day; taking 365 days, that would give a rent-charge of 1,825 *l.* a-year; now, there are five companies; five times that sum would give 9,125 *l.*; that represents the forty-eighth of a farthing on each 1,000 gallons, or one-twelfth of a penny for each 1,000 gallons; it is 0·48 of a farthing on each 1,000 gallons; I should very much prefer the charge being a rent-charge, and to rise in proportion to the volume of water taken, and not a fixed charge, because as the population increases upon the valley of the Thames, as it certainly will increase, and

upon

upon the tributaries, to render the Thames pure, and preserve it pure, they require an increased cost and expenditure; and if the companies' arrangements with their customers will not bear the eighth of a penny added to the price of the 1,000 gallons, I, as one of their customers, would tell them frankly that they may charge me three times the eighth of a penny more if they will do what I ask them.

2738. And they would pay in proportion to their receipts; as their receipts increased, their contribution would increase?—Their contribution would increase.

2739. At the same time, the expenses of the Conservators might increase?—I do not say you shall make them pay absolutely and unconditionally this 10 *s.* per 1,000,000 gallons; but generally they should have a maximum rate, and then if it can be arranged, that they should only pay their equitable share in proportion to other interests for the benefits received, if that can be devised; I think it should be made equitable, that is to say, if the Thames can be maintained in order, and in proper repair, for the sum of one-eighth of a penny per 1,000, or 5*s.* per 1,000,000 gallons, I say that is the sum which you must levy; but if it costs 10*s.*, then they shall pay that; and if it costs more, that this Bill shall not give power to tax them for more.

2740. Other interests, no doubt, would pay in some form or other; those who are interested in the navigations would pay tolls on the navigation?—If this large sum of money is ultimately laid out upon the navigation, from my experience of canal and river navigation, I would venture to tell this Committee that the navigation would not pay the costs, but I am very much inclined to think that the income from that navigation, so maintained and so put in order, would rather astonish persons who are desponding about it; I think it is very probable that there will be a very much larger increase than the desponding persons would imagine.

2741. Notwithstanding the competition of railways?—Notwithstanding the competition of the railways.

2742. In the event of the Conservators deriving a considerable income from the tolls on the navigation, the water companies might look to have their contributions diminished in future years?—Just so.

2743. You have referred to the pollution of water by sewage; do you think it very important that the pollution by the throwing in, or allowing to be thrown in, of refuse from manufactories should also be prohibited?—I do; I may state that the solid and fluid matter of 500,000 persons goes into the Thames; I believe I am under the mark; I have taken it from our published reports, to shew the effect on the imagination, at all events, of allowing this effete matter to pass into the water, which we are now called upon to drink. The weight of soil and urine from one person per annum is,—urine 61 lbs., and fœces 34 lbs., making the total solid matter for one person 95 lbs.; and multiply that by 500,000 persons (and I myself think that is not at all an exaggeration at the present moment, but is liable to be increased), that would give 47,500,000lbs., or about 21,205⅓ tons annually of human excrement mixed with Thames water above the point at which it is abstracted by the five companies for the supply of London. And then, to show that that is not hypothetical, I have a return of the same kind with reference to the utilisation of that sewage. I have taken the annual value of the sewage as revised by different authorities; Dr. Hoffman gives the value of it at 11 *s.* 9¼ *d.*; Dr. Thuddishum, 10 *s.* 5½ *d.*; Laws and Gilbert, 8 *s.* 4 *d.*; I have added the three together and divided the total by 3, and that gives me 10 *s.* 2¼ *d.* as the value, and multiplying that by 500,000 persons at 10 *s.* per annum, it gives a gross sum of 250,000 *l.*; I do not mean to say you can realise that in the market, I only mean to say that it should not be tolerated that all those thousands of tons of human ordure are to be put into the water which we are to drink, and that if there is that value in it, all that money is being wasted. If I am not taking up too much of the time of the Committee I should like to refer to another matter, which is very important, with regard to water drinking; cholera has been hovering about on the Continent, and I am sorry to say that cholera has again broken out sporadically in England; it is reported in the "Times" of yesterday that undoubted cases of cholera had taken place near Huddersfield, and cholera has again broken out in Liverpool; I see it is breaking out sporadically on the Continent; a writer in the "Times" of the 11th June, says this: "It is very certain that the water abstracted from the Thames is unfit for dietetic purposes, and equally certain that the abstrac-

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tion is a terrible injury to the river; inorganic impurities can be no harm, or at least are likely to be beneficial, provided they consist of the only ordinary sulphates, carbonates, and phosphates; the worst that can be said about them is that they occasion a waste of soap; but of organic impurities, the least that can be said is that they are pernicious, and it can be no exaggeration of the truth to say that they are dangerous: it is simply absurd to suppose that organic impurities, and the acids resulting from their decomposition, are removed by any filtering process; matters held in suspension, and generally all mechanical admixtures, may be entangled and precipitated on a filtering bed, but matters that have undergone solution accompany the fluid, changing from mild to deadly degrees of poison, and spreading the germs of disease wherever the water containing them is applied to dietetic purposes; a return to the general and primitive custom of drinking cold water would, no doubt, decimate the population of London; it is only because nearly all the water consumed in the form of beverages, and associated with food, has been subjected to high degrees of heat, that we are not generally cognisant of the poisonous character of the waters supplied to the inhabitants of London; the fact is, that water drinking is regarded as a dangerous custom is by no means creditable to either our science or our morality; we cannot secure a good draught of the best of all beverages, and, as a corollary negative, we cannot praise ourselves as patterns of sobriety."

2744. *Chairman.*] If these companies, as you propose, pay the eighth of a penny per 1,000 gallons, that would be the maximum?—Yes.

2745. That would be supposing the consumers ultimately paid, making the population of London pay between 8,000 *l.* and 10,000 *l.* a-year to avoid those evils that you have mentioned?—It would; and, as I say, if they can put it upon my rent I shall be very happy to pay the bill.

2746. You do not think that that would be too much for the population of London to pay for such an advantage?—It would not on my house amount to 3 *d.* a-year more

2747. Sir *M. H. Beach.*] Do you know who the writer of that paragraph which you have read from the "Times" is?—I have no idea.

2748. Mr. *Acland.*] You adopt it?—I believe it.

2749. Mr. *Reilly.*] You would apply the same views which you have expressed with regard to sewage, to the refuse of paper-mills, tanneries, and other manufactories, would you not?—In a modified form; the refuse from tanneries, from skinneries, from slaughterhouses, unquestionably should be prohibited; the refuse from paper-mills is not in itself of so injurious a character as the material we have been speaking of, ordinary sewage; but all refuse, even from paper-mills, is liable to effect the water injuriously, and ought to be prohibited.

2750. You think that could be done without a disproportionate injury or risk to the paper-mill owners and others?—I must not say that, because the manufacturers have told me that if the arrangements of this Bill are enforced we shall ruin some of the small mills on the Thames.

2751. They have stated that to you?—Yes.

2752. There are instances, on the other hand, of some paper-makers on the Thames utilising their refuse?—We had that evidence; but I think that if you purpose to examine Professor Way, he will give you better evidence on the utilisation of the refuse from paper-mills than I can.

2753. Have you considered whether it is very desirable that there should be unity of management throughout the whole of the river, beginning at Cricklade downwards?—I am of opinion that it is quite necessary to the due and proper management of the river, that there should be one jurisdiction over the entire river, from Cricklade down to the boundary of the City Conservancy; and I will go further and say that, in my opinion, it would be a more complete Bill if it took jurisdiction over the entire basin of the Thames, including its tributaries; that is my opinion.

2754. But of course you are perfectly aware that, according to Parliamentary practice, the scope of this Bill cannot be extended, at least on the present occasion, so as to comprise a larger geographical area than it does?—I believe not, but I was merely expressing my individual opinion.

2755. If necessary, Parliament could at some future time give enlarged powers to the Conservators, so as to include the tributaries of the whole basin?—

If

If the Thames Conservators fulfil the duties entrusted to them in a satisfactory manner, their area could be extended.

2756. You are clearly of opinion that it would be a pernicious thing now, to set up an authority for the part of the river above Oxford, distinct from that which would have the control over the river immediately below Oxford?—I am satisfied it would; you would have two separate Boards, you would have two separate sets of paid officers, and you would have that divided action which is always a disadvantage where a thing can be looked after by one and the same.

2757. The works of the river below Oxford might greatly affect the river above Oxford, might they not?—No; the works above Oxford might affect the river below Oxford.

2758. I was going to take it in both ways; the absence of works on the river below Oxford might greatly affect the river above Oxford; for instance, the works below Oxford might keep the water up?—Yes; and if the river is to be made navigable, the defective works below Oxford, or improper works, might affect the river above Oxford.

2759. And *vice versâ*, the works constructed above Oxford might have a most injurious effect, or, on the other hand, might have the most beneficial effect on the river below Oxford; is not that so?—It is.

2760. If that is so, would it not be very desirable that there should be one constituted authority for the execution of these works, both above and below?—It would.

Cross-examined by Mr. *Toulmin Smith*.

2761. You stated that you did not come here to give your evidence in any spirit of hostility to the companies; I apprehend the tendency of your evidence is rather friendly to the companies who supply this water than otherwise?—I sincerely hope it may be so.

2762. In explaining the mode of applying sewage to the irrigation of land, it seemed to me that it might be inferred from your answers, that sewage water was only to pass over the land; but I apprehend your meaning is, that all the particles of sewage must come in contact with earth, more or less, or else it would not have the effect of purifying it?—Yes, and according to my opinion, I believe that where land is of that character as to admit of percolation, the purification of the water would be effected more rapidly than if a small area of land, that is to say, if the land was deeply drained, say three or four feet deep, you could compel the sewage to descend through that depth, whereby the purification would be better.

2763. The reason of that would be because you are more certain to insure that every particle of the sewage comes in contact with the earth?—Yes.

2764. In speaking of Worthing you stated that the water there was in a state of comparative purity; can you explain, if that is so, how it is that between Worthing and Shoreham there are some deep, wide trenches which are empty at low tide, and not full at high tide; and therefore I presume it is not the sewage that goes into them; but the smell is most abominable from them?—Do you mean to say that that is the case now?

2765. I mean to say that that is the case now?—I was at Worthing on Monday, and I was over the irrigated fields; I did not go to the points you named, but I failed to find any smell.

2766. You know there is a water-course running from Broadwater, in which parish Worthing is situated, down to the coast half-way between Worthing and Lancing, which always smells very bad, does it not?—If it does, it very possibly arises from the mingling of the fresh water of the land from inland with the salt water, and decaying vegetable matter, which gets in, which always gives off a very offensive smell.

2767. No part of the drainage of these 42 acres passes into that channel, does it?—Yes; after it has passed over the 42 acres it flows down into the Teeville Brook; that Teeville Brook has its outlet into the sea at a point there; but it is passed out through a cast iron outlet, by an arrangement which I understand was made to prevent any of the sewage finding its way into those offensive ditches which are purified.

2768. Are your 42 acres on the Lancing side, or on the Heen side of Worthing?—They are about a mile from Worthing.

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2769. On which side?—There are two windmills standing there; those two windmills stand on the boundary fence of one lane; and that lane bounds the Worthing end of the 42 acres.

2770. You may take it as certain, that the smell of which I spoke is not not caused by the water which flows from those meadows?—I will not be certain; I should not like to say what I am not sure of; occasionally the sewage is not pumped on the land, for they pump night and day, and sometimes, as I have learned, they neglect to pump it in the ordinary course; so that I will not undertake to say that you have not some offensive smell occasionally there.

2771. The smell of which I spoke is so intolerable night and day that it is impossible to go near it?—It is not from our sewage.

2772. It is as offensive as it possibly can be?—I do not believe it is from our sewage, but I will not undertake to say anything about it.

2773. In the Report of your Commission, you speak in two distinct places of the towns, cities, villages, and houses along the Upper Thames, as pouring their foulness into the river; you will find that at the bottom of page 11 and at the bottom of page 15 there is the same thing reported in other words?—Yes.

2774. You there speak, in very strong terms indeed, of the extent to which the pollution is carried. "Throughout the whole course of the river, from Cricklade to the point where the metropolitan sewage commences, fouling of the water by sewage from cities, towns, villages, and single houses, generally prevails"?—Yes.

2775. I think you have said to-day that you only know a single house, through the whole of that distance, to which means are applied for preventing the sewage falling into the Thames and polluting it?—Mr. Lloyd, a well-known paper maker, who has one of the mills on the Thames, told us that he did utilise his own sewage; he is a mill proprietor.

2776. That is the only instance you know of through the whole length of the river from Cricklade to Staines?—Of any individual householder.

2777. There is no instance of a town or village?—Not that I am aware of.

2778. I believe your experience has been very large indeed, ever since the passing of the Public Health Act, with reference to all Acts relating to drainage and sewage works in towns?—Yes.

2779. I may say that no one can have had a larger experience than you of the different classes of works which have been devised for endeavouring to remove the evil?—I think not.

2780. Does it not result from that experience, and the evidence which you have taken before this Commission, that you are perfectly satisfied that there do exist the means of removing the nuisances which we all so much complain of?—That is my opinion, and that is the result of my experience.

2781. And also of the evidence which you have taken before this Commission?—Yes, and the evidence which I have taken or been cognisant of before the Sewage Commission.

2782. You have stated to the Committee, and it is stated in very strong terms also in this Report, that you consider the only effective means of action in this respect are by pouring the sewage matter direct upon land; for irrigation purposes you consider that it is important that there should only be constituted one system?—Yes.

2783. You are aware that there is another view entertained with regard to London and the towns in the neighbourhood of the Thames, which is by intercepting the sewage from the Thames?—Yes.

2784. You are aware that the Thames Purification Bill is at this moment passing through this House?—Yes.

2785. I presume you would consider that inasmuch as there is little difficulty in towns obtaining land necessary for the purpose, it would be desirable to adopt the method of intercepting sewers if no other means can be adopted?—Just so.

2786. I merely wish to put before you this observation, that inasmuch as you state in this Report that it would be necessary to obtain further powers, namely, powers for the compulsory purchase of land, there is an alternative which is open for this Committee to consider, if they are asked to insert clauses to that effect to make these works obligatory; and if the Thames Purification Bill passes into law, that is a measure which the towns may adopt for carrying off their sewage away from

from the Thames?—But I anticipate that that Bill provides for the ultimate application of the sewage to land.

2787. Precisely?—There are no means for that company to intercept the sewage of the towns on the banks of the Thames or in the valley of the Thames.

2788. The way in which that company proposes to do it may be called doing it in a wholesale way?—If I can aid that company by word or deed, I will do so; I think they ought to have every encouragement.

2789. In your Report, you said very hard things indeed of the tank system; you are aware that that tank system has been applied with very great benefit?—Where.

2790. You know the case of Birmingham very well, I believe?—Yes.

2791. You are aware that eight years ago an injunction was granted against the town of Birmingham, prohibiting them from passing their sewage matter into the River Tame, at the instance of Mr. Adderley?—Yes.

2792. You are aware that, in consequence of that, they have made large tanks, by means of which the sewage matter is subsided, and the subsided matter is carried off in barges along the canal?—Yes, the Birmingham tanks are not such tanks as are referred to in the Report; the sewage is something like from 10 millions to 12 millions of gallons per day; those tanks simply serve the purpose of intercepting the solid and flocculent matter brought down by the sewage, and n some way they stir the water until putridity sets in.

2793. It passes off after the sold, matter has subsided into the Tame?—They take out the extraordinary quantity of something like from 500 to 600 tons per week of solid matter, or from 25,000 to 30,000 tons per annum out of the sewage of Birmingham, by means of those tanks.

2794. You are aware that that is sold, and yields several thousand pounds a year to the Corporation?—I am not aware of that; I am aware that it is accumulated in thousands of tons there, but I thought they could not sell it.

2795. Will you look at that Report of the Statistical Society, in which is stated the amount received by the Corporation of Birmingham in 1864 and 1865, from the sale of this solid matter?—"Night soil and manure" it is marked.

2796. £. 4,000 in 1864, and £. 5,000 in 1865?—But this is not sewage; "Night soil and manure" is marked under, which is a very different thing altogether; I have acted as consulting engineer to the Corporation of Birmingham for the last 10 or 12 years, and I am sorry to say that there is great difficulty about it; they cannot sell the matter at the outlet because they cannot dry it; it is so difficult to separate the fluid, that it remains unsaleable except to a limited extent of not more than 6 *d.* per ton.

2797. Are you not aware that a few days ago the House of Commons threw out the Worcester and Birmingham Canal Bill, and that one of the principal reasons was, that if that canal came into private hands the Corporation would not be able, as they now do, to send on the Worcester and Birmingham Canal this subsided matter?—No, I was not; I do not wish to deny that they are now selling it; if they are I am very glad to hear it, but it is a matter of very recent occurrence, if they are selling it profitably in any quantity.

2798. I can tell you that they are in point of fact?—Then it is new to me.

2799. Will you be good enough to look to the eighth of the Reasons against the second reading of the Worcester and Birmingham Canal Bill in the House of Commons: "The maintenance of this water communication touches not only the commercial interests of the whole country, but directly concerns the public health of Birmingham and the neighbourhood; inasmuch as the Worcester and Birmingham Canal is very largely made use of by the Corporation of Birmingham to carry away from that town, into the upland districts through which the canal passes, the produce of the subsided residue which is collected at the outfall of the sewerage of a town containing more than 300,000 inhabitants; the deprivation of this means of transporting to a distance that produce will be in the highest degree injurious to the public interests of the whole neighbourhood; an injury for which no 'compensation' can be given; and which, therefore, alone takes this Bill out of the range of Bills to which public policy allows that the sanction of Parliament should be given"?—My reply is, that if it is carried away to any extent, that is a matter which has very recently been brought about; I know that the Corporation of Birmingham have found great difficulty in getting rid of it.

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2800. In the meantime, you are aware that the waters of the Tame are made much clearer by the adoption of that system?—To the extent of keeping out from 25,000 to 30,000 tons of solid matter, which, after all, is that which gives the foul character in the eyes of chemists.

2801. Although that is not a perfect or complete scheme, such as the irrigating land scheme is, yet it presents another alternative which might in time be put into use in order to prevent the pollution of the Thames?—It would never present an alternative which would be recommended for adoption in the valley of the Thames, where the water has to flow down into the river for household purposes.

2802. Not as a permanent alternative?—I would never recommend it under any circumstances as an equivalent.

2803. Would you not as a temporary measure?—When you are going to irrigate with sewage it is generally advisable to have such a tank as you have described as being at Birmingham, *plus* the irrigation, to take away the solids, which would otherwise clog the channels and entangle the roots of grass on their surface, and cause a smell.

2804. I believe your opinion has been expressed very strongly, that in no case ought any of this pollution to be allowed to go into the Thames, and that it ought to be made impossible?—Just so.

2805. Do you conceive that throwing this nuisance into the Thames by any town or any house is in itself wrong?—It is a wrong, and it is acknowledged to be so by the common law of England.

2806. Therefore it follows that it is no hardship upon the community of any town, or any person, being compelled to do that which is right by having this wrong removed?—It is not; and where compulsion has been brought to bear, as in Croydon and some other places, the towns have found that they were not only done a wrong to, but were put in the way of doing right for their own benefit.

2807. You state in the 18th page of your Report, "It seems impossible to come to any other conclusion than that the only safe course is to keep sewage out of the river; we have already shown generally that sewage can, without practical difficulty or serious loss, be kept out of rivers by application to land; the Thames Valley, so far from presenting special local difficulties, seems to offer a peculiarly suitable field for the initiation of the system of river purification." That represents distinctly a matter of opinion, I apprehend?—It does.

2808. If that is a thing which is thus impossible, are you not of opinion that the powers in the Bill which is now before the Committee ought to be made imperative, and not left optional?—In my opinion it ought to be made imperative, after due notice, and after giving the parties every opportunity of acquiring land and executing the works.

2809. Do you agree with Mr. Phinn in his opening, where he states, "I apprehend the foundation of the whole is this, that no time can legalise a nuisance; if it can be proved that the discharge of this sewage into the Thames so affects the health of the public, and so injures the water that the public have to drink that it affects their health, no length of time, no prescription, would avail the doers of this act against an indictment; if that be so we must revert to the original rights of society as against these rights acquired by others; rather than tacitly acquiesce in the continuance of this nuisance, we must revert to our original rights, and must put them down with a strong hand"?—I quite agree in that.

2810. You entirely concur in that opinion?—Yes, I do.

2811. Have you examined this Bill yourself?—If I did I am afraid I should not be much the wiser; I do not profess to be a lawyer.

2812–13. Your great experience in the application of the Public Health Act and the Local Government Act has given you opportunities in the discharge of your duty of forming an opinion under those Acts.

Mr. *Phinn.*] We admit that it is not imperative, but only in the discretion of the Conservators.

2814. Mr. *Toulmin Smith.*] You perceive that the 47th section has reference to prohibiting sewage from being sent into the river, where it is not so sent at present?—Yes.

2815. Is it not your opinion that that will be, practically speaking, legalising that

that which you have stated to be contrary to the common law, unless there are further clauses which impose upon the Conservators of the Thames an obligatory duty to cause the removal of those nuisances which you have stated to exist from one end of this navigation to the other?—In my opinion the clause ought to be obligatory.

2816. If you glance at clause 48 you will see that it is not so; but I will ask you no further questions upon that. Now let me ask your attention to the 50th section; you will perceive by the 50th section there is the proviso, that is to say, a power given to those persons who have notices served on them by the previous section to plead in mitigation, "Provided that in any prosecution for the misdemeanor aforesaid the defendant shall not be liable to conviction if he shows to the satisfaction of the justice or justices, or court by whom the matter is heard, either of the following things—namely, first, that the act or thing complained of does not injure or tend to injure the water of the Thames; or, secondly, that it is not reasonably possible for him to discontinue the doing of the act or thing complained of." Do you not consider, from your experience, that those two pleas which are put in the hands of those who have notices served on them, will make the whole operation of this Act nugatory?—If these things are to be pleaded in mitigation, that is to say where sewage pollution takes place, I think they ought not to be here; I would have no pleas in mitigation.

Sir *G. Bowyer.*] They are not in mitigation?

Mr. *Phinn.*] They are not in mitigation; they are in excuse.

2817. Sir *G. Bowyer.*] What construction, as a practical man, would you give to the words, "reasonably possible"?—For instance, if Oxford or Reading, or any other town, is about to be sewered (Windsor is sewered), I would give the local authorities notice that they should cease after a time to pour that sewage into the Thames as it is poured now, provided that in some way or other they should be enabled to acquire land to utilize their sewage.

2818. You think it is the duty of Parliament to give them the power to acquire land?—I do.

2819. Do you not think that by agreement with the neighbouring landowners they could acquire land which they might use for that purpose?—We never shall in this country, I hope, have what are called compulsory powers to take a person's property against his will, without a fair equivalent for it; what is meant is this, that they should have power to serve notices, the same as exist now, with reference to railway and other Acts, and that they shall go to arbitration if they cannot agree.

2820. Do you not think that in most instances there would be no difficulty in agreeing with one of the landowners for the disposal of the sewage?—I do not think that there will when the matter is thoroughly understood, and when it can be shown, as I am satisfied it can be shown, that it will increase the rental of that estate several fold.

2821. Is there any doubt about that?—There are people so obstinate, and so pig-headed, to use a common term, that if you can show them any amount of damage they would still selfishly resist.

2822. Do you think, in the case of any town such as Reading or Abingdon, that if they had Parliamentary power to take land to dispose of their sewage, that it would render it not "reasonably possible" for them to cease pouring that sewage into the Thames?—No; what I mean by compulsory power is this: a machinery similar to that provided under the Local Government Act. A local Board, if it wishes to carry out an improvement of any kind, even sewage irrigation, within its own area, is not compelled to go through all the expense of a local Act of Parliament, but it can get compulsory powers by a small process provided under the Act; it serves its notices just as for an ordinary Act of Parliament, it petitions the Secretary of State, and the Provisional Order is drawn, which is laid before Parliament, and if it is unopposed it goes through Parliament, and it becomes to those parties, to all intents and purposes, an Act of Parliament giving them compulsory powers; that is within their own area, and is done by a Provisional Order; but if they require to take a yard of land beyond their own boundary, they must then go for a private Act of Parliament, and incur all the expense of a private Act of Parliament. If a machinery simple as to form, could enable them to go afield, to serve their notices, to treat for the land

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for irrigation purposes beyond their boundary, without incurring the great expense of a private Act of Parliament, that is what I mean by compulsory powers.

2823. I want to know whether, as the law stands now, Reading or Abingdon could plead that it is not "reasonably possible" for them to cease to throw their sewage into the river; could they plead that with justice?—They might plead that they could not do it without getting a private Act of Parliament.

2824. But they could do it also by agreement?—But there, again, many difficulties arise.

2825. Would they not have to show that they made an attempt to make an agreement with neighbouring landowners for the purpose of disposing of their sewage, and that they had failed to do so; could they say that it was not "reasonably possible" for them to divert their sewage from the River Thames, unless they had made an attempt, by due diligence, and by arrangements with the neighbouring landowners, to get rid of the sewage?—They could set up a sham; they could put up an opposition; if they had not power equivalent to Parliamentary power, they might get some individual to say, "You shall not go through my land."

2826. Mr. *Toulmin Smith*.] Was the land in Worthing, Oxford, or Croydon obtained by Parliamentary powers, or by agreement?—By agreement.

2827. Then those three are instances in which it has been done by agreement, and difficulty has not been found?—Yes.

2828. I think you stated that in the case of Croydon an unreasonable rent is about to be asked, and therefore they are going to ask for powers over some other land?—They certainly can do anything by agreement, but one intervening landowner can stop you if you have not compulsory powers.

2829. I presume you remember very well indeed the grounds which were actually taken by the Corporation of Birmingham, in resisting Mr. Adderley's motion for an injunction?—The grounds taken were that they had not compulsory powers over the land necessary for irrigation.

2830. Was not the identical ground taken which this clause 50 would give, if it is allowed by the Committee to remain in the Act; I have the regular report of the case, and can refer to the grounds; I believe you were engaged professionally at that time?—No, I was merely examined upon the general principle; I was not engaged in that case of Mr. Adderley's.

2831. This is from the regular Law Reports, and I ask your careful attention to it: (*The Attorney General* v. *The Council of the Borough of Birmingham*, reported in 4th Kay & Johnson's Reports, 528.) "If the drains are stopped, as prayed by the Bill, the entire sewage of the town will overflow; Birmingham will be converted into one vast cesspool which, in the course of nature, from the great elevation of the town (450 feet above the sea level), must empty itself into the Tame as before, only in a far more aggravated manner. The deluge of filth will cause a plague, which will not be confined to the 250,000 inhabitants of Birmingham, but will spread over the entire valley and become a national calamity. The increase of population, inseparable from the progress of a nation in industry and wealth, is attended, of necessity, by inconvenience to individuals, against which it is in vain to struggle. In such cases private interests must bend to those of the country at large. The safety of the public is the highest law." Then, in a subsequent part, "Here there has been, and is, perfect *bona fides* on the part of the defendants in doing their utmost; they are still using every means to prevent the nuisance complained of. They cannot, nor can this Court, compel them to effect impossibilities; but they are trying, and will continue to try, every experiment which science, as it advances, can suggest, and an undertaking would only fetter them, by compelling them to adopt some one which might not prove the most effectual." The Vice-Chancellor, in giving judgment in that, said, "In one respect, it is true, arguments as to the discretion which the Court should exercise in a case like the present may very properly be addressed to it, viz., that before granting an injunction compelling the sudden stoppage of works like these, inasmuch as such an injunction might produce a considerable injury, the Court, by way of indulgence, would afford the defendants every conceivable facility to enable them to remedy the evil complained of; but when I am told that they have

have already done their utmost and spent all their money in endeavouring to remedy that evil, and that now, in order to discharge the duties which the Act has imposed upon them, they have no alternative but to override the rights of private individuals, the answer is this: if they have not funds enough to make further experiments, they must apply to Parliament for power to raise more money; if, after all possible experiments, they cannot drain Birmingham without invading the plaintiff's private rights, they must apply to Parliament for power to invade his rights; and if the case be one of such magnitude as it is represented to be, Parliament no doubt will take measures accordingly, and the plaintiff will protect himself as best he may;" and he also says, "How the town is to be thoroughly drained without causing a nuisance is the business of the defendants to discover; it is no business of the plaintiff; and if it should prove an impossibility, the argument does but come back to the same point; the town must remain undrained, unless the defendants obtain another Act of Parliament, enabling them to do that which at present the law will not allow." Does it not clearly appear from that judgment, that this section will give all these powers of putting in pleas and excuses for not doing the work which they have not at present under the law as it stands?—I would rather not answer a legal question; if the clause is as you say, of course the Committee will understand it without my opinion.

2832. I will refer you to some questions and answers in the evidence before the Rivers Pollution Commission, beginning with Question 8928: "And works for purifying the water and preventing sewage or noxious matter flowing into the Thames would also be a benefit to water companies? *A.* Decidedly." This is Mr. Leach: "*Q.* For any works of that character, tending to equalise the flow of the water, to increase the minimum volume, and to purify the water, do you think one might fairly look to the companies to contribute some portion of the expense in the shape of an annual rent-charge for the water taken? *A.* I think so." In the closing paragraph of your Report, in page 31, is to the same effect, that in the event of the Thames being purified, and means being taken to prevent the pollution of the River Thames, the companies might fairly be called upon to contribute?—Just so.

2833. Then the contribution of the companies to the improvement of the Thames is dependent, in your opinion, upon the Thames being purified; is that so?—It is.

2834. You do not consider it would be fair to tax the companies beyond the amount that they now pay, unless they were absolutely guaranteed that means would be taken to prevent the pollution now running into the Thames?—I do not think that this Commission, or this Board, which is to be formed, would be justified in taxing water companies to restore the navigation or to maintain the navigation; I think that would be a very unjust process.

2835. Only in consideration that the river is freed from pollution?—From impurity.

2836. That is the consideration?—That sewage is to be kept out of it, and that the surface is to be scavenged, and that their bye-laws are, as far as possible, to prevent the contamination by dead dogs and dead animals.

2837. Then you are of opinion, I see, that this Bill, when it is passed into law, ought to contain clauses to make it obligatory on the Conservators to perform those duties which will render the Thames free from pollution?—I am.

2838. You are familiar with the waterworks of Manchester, are you not?—I am not familiar with them; I know them generally.

2839. You are aware that the Corporation of Manchester supplies Salford with water?—Yes.

2840. Are you aware that the water before it is sent to Salford is purified by the Corporation of Manchester in the best possible manner?—I am not aware that the Corporation of Manchester use any means to purify the water; it comes from a pure source.

2841. It is pure before it is sold?—It is beautiful water.

2842. You are aware that the water of a running stream cannot be sold in itself; it can only be under conditions such as you spoke of, that on condition of that water being purified a certain sum is paid?—Yes.

2843. Does not some purifying take place of water which passes through sand, somewhat in the same way that it does when water passes through earth?—It

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—It may; but I believe it is to so small a degree that chemists do not take any note of it; it is not considered to act chemically upon impure water.

2844. You are aware that this great scheme, which is to carry all the sewage of London to the Essex coast, is to make a sandy district fertile?—That is so.

2845. You do not appear to put very great faith in it?—I do not dispute it; all that I would imply would be, that sand is not itself a subsoil out of which you can expect the greatest amount of profit; there is also a Bill going through the two Houses of Parliament to enable the sewage of Liverpool to be applied to the sand between Liverpool and Southport.

2846. Unless the sand has some very purifying influence, the pouring of this sewage on sands would create a public nuisance?—Oh dear, no; if you made a great area of land merely a lake of cesspool matter, it might be a nuisance; the intention is to do as at Edinburgh, where a considerable area of land, under irrigation, was bare sea-sand; if you pull up some Italian rye-grass, which I have done, there is not above an inch and a half where the black rootlets are.

2847. That is one instance which you have mentioned at considerable length in your Report, as showing that the application of sewage matter to irrigate land is not thought hurtful?—Just so.

2848. It is your full belief that this can be done without injury?—That is my firm belief.

Cross-examined by Mr. *Holland*.

2849. There has been one class of persons mentioned who are interested in the improvement of the navigation; that is to say, those who are trading along the river; they pay tolls, no doubt, for the improvement; are not the landowners and riparian proprietors as much benefited in the flooding being prevented as anybody?—If you prevent flooding they would, but preventing pollution would not necessarily prevent flooding.

2850. I am speaking of improving the navigation, that would prevent flooding?—The improvement of the navigation would not in itself altogether prevent flooding, not necessarily.

2851. Had you not a considerable amount of evidence before you, that the improvements intended would tend to prevent flooding and otherwise benefit the landowners?—If you lower the weirs and the locks with the weirs, by so much as you lower them and dredge the pools you would prevent a flood-water rising over the adjoining lands; but I do not anticipate that any mere improvement of the navigation as a navigation would tend to prevent some surface flooding, if nothing else is done.

2852. Let me refer you to Dr. Acland's evidence; at Question 2152 he is asked, "Do you know of anything that has been done or omitted to be done which would influence the flooding of the valley of the Thames? I know that the different obstructions on the river are the cause of floods in all directions, and that the floods are most prejudicial to health, and, under proper management, unnecessary, and therefore a grievance." I want to know whether you concur in that view?—The words occur there, "Under proper management."

2853. I am assuming now that the improvements that you propose would prevent a flooding?—But the proper management of the Thames would bring in another element; it would bring in river embanking and arterial drainage.

2854. Would not the improvements that you have been speaking of, with respect to weirs and locks and dredgings, tend more or less to prevent drainage?—Most unquestionably, if properly done.

2855. And floods are prejudicial to health, according to Dr. Acland's evidence?—I think if any person saw the Thames last winter, with hundreds of acres under water, two or three feet deep, they could not fail to be of opinion that that could not tend very much to promote comfort, and I believe it is most injurious to health.

2856. Had you not also a considerable body of evidence before you of riparian proprietors, members of local Boards, and so on, who expressed their willingness to contribute to the improvement of the river?—I think I remember several owners, and others, who expressed their willingness to contribute, and said if they had an equivalent advantage that they would not object to paying for the improvements which would be carried out.

2857. I understand your own opinion to be that, equitably, those who benefit by the improvements should be called upon to pay, if it can be managed?—Just

Just so; if you have a large area of the Thames which is flooded every time the rainfall exceeds a certain amount, and inevitably flooded, and any works are necessary to prevent that flooding, and it does increased benefit to any property, whether it is land or whether it is houses, that there should be a legal power to levy on the persons so benefited a rate to meet the expenses incurred.

2858. With reference to the power to take lands, let me refer you to one of the recommendations which is attached to your Report: "That, subject to proper safeguards, to prevent abuse, powers be given to local authorities to take land compulsorily for the purpose of sewage irrigation, to an extent not exceeding one acre for every 50 persons whose sewage is to be applied"; you recommended that?—Yes.

2859. So that, probably, you still adhere and think that a clause should be introduced into this Bill, to give that power to local Boards?—I do not think it is necessary to introduce it into this Bill; I think it will be better provided for in some Public Health Bill connected with the Local Government Act.

2860. But, at all events, you think that power should be given to the local Boards?—Yes.

2861. You think it should be introduced in some Bill, if not in this?—Yes.

2862. You think that scavenging the water of the Thames is absolutely necessary?—I do.

2863. You also think that a compulsory power should be given, or, at all events, that a power should be given, to scavenge the water?—Certainly.

2864. And therefore given in this Bill?—I think it should be given in this Bill.

2865. At present there is no power given in this Bill to do that?—I imagine the Conservancy Board, if established by this Bill, would be enabled, by bye-laws, to prevent the pollution of the river by throwing things in.

2866. Are you aware under what power the Conservators scavenge?—I think under their bye-laws.

2867. I think there is no power in this Act; in your Report, at page 18, you say, "We would suggest a statutory provision, allowing reasonable time for the making of the new arrangement, requiring at the expiration of that time all outlets into the Thames of existing sewers to be closed, enabling the authorities, in default of the owners, to do the necessary work, and to enforce payment of the same"; do you now think there should be some clause in this Bill carrying out that suggestion, namely, that the new Board, however constituted, in default of the owners doing the work, should have the power of doing it and enforcing payment?—I should be very glad to see that in the Bill, if it can be put in.

Cross-examined by Mr. *Bailey*.

2868. I understand you to be sanguine that this scheme of irrigating fields in the neighbourhoods of towns would pay its own expenses?—I do not think I said so.

2869. Is it your opinion that there will be a loss to the towns, in carrying out this scheme of irrigation?—No; but I wish to express my opinion as strongly as I can express it, that sewage should not be allowed to go into the Thames; and that the local authorities should be compelled to filter it or purify it, by passing it over land irrespective altogether of its paying.

2870. Are you of opinion that it will pay?—My belief is that it will pay in the greater proportion of cases; I can imagine cases where it may not pay.

2871. Sir *G. Bowyer*.] In what cases do you think it will not pay?—I imagine where you might have to go a considerable distance, and where you might have to lift it to a very great height, and where the volume of sewage would not be sufficiently large.

2872. Mr. *Bailey*.] If you were to take the valley of the Thames, and take the works as a whole, do you think, as a whole, the works would pay their own expenses?—As far as I have seen the valley of the Thames, I have not seen a point yet where I have paid any attention to that; but I think that if works are laid out with judgment, and managed with due care, that they will pay their expenses and more.

2873. If the water companies were permitted to do these works, they would

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get all the benefit of excluding the sewage without any loss to themselves?—They might.

2874. Then, in fact, if they are to pay a rent-charge of 10,000 *l.* a year, which is what represents the pecuniary payment by them, they ought to have some return for it?—If the water companies choose to turn themselves into sewage irrigators, or to join with some sewage company, and utilise all the sewage of the valley of the Thames, and make a profit out of it, then I think that the Bill should provide that, in so far, any rental demanded from them should be lessened in proportion to their accomplishing that purpose.

2875. I presume if they made profits out of it there would be no occasion to lessen their rental; is not the result this then, that Parliament is to compel the towns to undertake works which will pay themselves, which works will benefit the water companies, and therefore the water companies are to pay 10,000 *l.* a year to be applied to a totally different thing, namely, the restoring the navigation of the Thames?—No; there are many forms of pollution of the water of the Thames, independent altogether of the sewage; if you leave the river in its natural state, as I have described previously, it will silt itself up, and form mud-banks, and grow weeds, and then pollution by a surface navigation would go on, and the Thames would be exposed, at first, to impurity, the cost of preventing which must be paid for; it must be carried on continuously.

2876. But of the works which are necessary to restore the navigation, there are only a certain number which will benefit the water companies?—The dredging of ponds, the maintaining of the banks, and the general maintenance of the river and its scavenging.

2877. But the accomplishment of all those objects will benefit the millowners, and the riparian proprietors, and the navigation?—It may benefit the millowners.

2878. And will benefit the riparian proprietors?—It may benefit the riparian proprietors, but not necessarily.

2879. It must benefit the navigation?—It must benefit the navigation; if the traffic comes upon the river, that will pay.

2880. Then, if it does not, the waterworks companies are to advance their money upon a speculation that the navigation may answer?—No; the water companies are to pay to a body having the bed and the water of the Thames vested in them.

2881. Not the bed?—They are to have charge of it; if they are not to have any interest in it, why are they to meddle with it or look after it; why are they to keep it pure?

2882. Is it not for the sake of the navigation that they do this?—I do not think it is; if you can make the Thames navigable, my own impression is that it will pay more than, perhaps, the desponding parties imagine.

2883. Why are the water companies to advance their money for the sake of a speculation, that the Thames may be made navigable?—As the water companies are left now to pump impure and poisonous water into London, Parliament might ask the question, why should they, as trading companies, be earning money out of that which is killing the inhabitants?

2884. If the consideration given to the waterworks is the purifying of the water, by stopping the drainage, if that stopping of the drainage does not represent any pecuniary loss, inasmuch as the towns may do it for themselves, is not Parliament selling its powers for pecuniary value to the waterworks companies; is it not exactly the same thing as if, when any railway company were to apply for a new line, Parliament were to say, you shall make it on consideration of a lump sum of 500,000 *l.*, or anything you like; is it not absolutely selling the powers of Parliament?—You cannot put a railway company into the position in which you put these waterworks companies. These waterworks companies now, notoriously, pump the water just as it comes from nature, and as man pollutes it, except the sand filtration: now this Bill proposes a very complete machinery; first, to prevent its pollution, which will be attended with great annual cost to the Conservators if they do their duty, because they will have to keep servants; they will have to visit these towns, and incur legal expenses in many instances, and, I daresay, it must be in compliance with the requirements embodied in the Act, and they will have to keep up a large establishment; the companies are reasonably called upon to contribute a portion of the necessary expenses.

2885. You do not pretend that these expenses will, in any sense, represent 10,000 *l.* a year?—I do indeed.

2886. The expense of visiting the towns?—I mean the whole expense of conserving the Thames as it ought to be conserved.

2887. And the keeping up the navigation?—And the keeping up of works, if you would divest yourself of the idea of navigation, because really it comes to that; it is necessary, in my opinion, to put the Thames into thorough order; to put its weirs, its locks, and its other works, into order; suppose the navigation never pays a farthing, that is necessary, in my opinion, for the Thames proper, and I believe it is essential for the welfare of the water companies.

2888. Ought not the water companies to pay so much of the expenses as would meet the expenditure necessary for this purpose, if the navigation was given up?—Just so; I have stated that the price named of 10 *s.* per million gallons empowered to be levied, should be the maximum.

2889. Would not that be far too much for the works which would be necessary, if Parliament were to come to the conclusion that no navigation should be continued on the Thames?—That I do not know; that will have to be a matter of experiment; I do not think 10 *s.* is a sum beyond what you could fairly levy as a rental on the water companies; the actual amount must be a matter of experiment.

2890. Mr. *Acland.*] When you say this 10 *s.* per million gallons, for what advantage is that a fair sum; what did you mean?—Did I use the words "fair sum."

2891. The learned Counsel used it?—I think that it would produce an income that would enable the Conservators to carry out the manipulative operations of rendering the surface of the Thames pure, and it would enable them also to increase the establishment necessary to carry on their operations in connexion with the other works, of looking after the navigation and the banks of the riparian proprietors.

2892. The point of my question is a little beyond that; you say it is in consideration of keeping the surface of the water pure?—And of enabling them to take action to prevent the contamination by sewage, paper-works, and other works.

2893. Do you think the sum of 10 *s.* is reasonable to be asked for the amount of that advantage in the direction given by the Bill, taking into consideration the fact that the Bill will only stop the sewage from certain great towns, but will not stop the contamination through its tributaries?—That may be so, I suppose, by the present Bill; but, as I said, it is our purpose (that is, I speak of the Royal Commission for preventing the pollution of rivers) to hold inquiries on all the tributaries, and to make an additional report upon those tributaries, and that report will be sent in to the proper authorities when we have completed it; it may or it may not recommend that the Conservators' power should be extended over those tributaries.

2894. What I want to know is, whether, in naming this sum as one which the water companies may reasonably be called upon for, are you prepared to say that that sum may be fairly charged for the degree of purification which you will now offer them, without waiting for the entire purification of the Thames and all its tributaries?—I think so; it would form the basis for enabling the Conservators to work upon; as I say, if the machinery of the work done does not cost the whole of the amount at which they may be rated, then it would be only fair to charge the companies, who have had more to pay, a sum so much less.

2895. You do not consider that this sum so leviable as money to be raised for a speculative navigation, but simply for improving the arterial drainage?—For enabling the Conservators to carry out purification to the greatest extent.

2896. Sir *G. Bowyer.*] And I suppose better supply also?—Yes.

2897. A more abundant and better supply?—A better supply in every way. At present the miller cuts weeds in a way to suit his own purpose; he cuts them either above his mill-head or below his mill-tail; he does not dream of taking them out of the river, but sends them floating down; and, as I have stated, if the carcases of dead animals come down to him, and they accumulate so as to be a nuisance, he opens his weir and sends them on: those weeds do one of two things; they either go on to the next miller and obstruct his wheel, or they are kept upon some of the aits or shoals, and get entangled with the weeds, and

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tend to disorganise the navigation, and prodnce mud and foul matter, which festers, and injures the water.

2898. Do you think if the water were made perfectly pure, that there would be a greater consumption of the water furnished by the water companies in London?—I do; it is notorious that the income of the water companies is increasing at a very rapid rate; there is a Parliamentary return which shows that between six and seven years the supply was very largely increased.

2899. And it would increase if the water were better, because then people would drink more water; people do not generally drink water if they can help it, but they would drink water if it were very good?—It is notorious that water is not drunk to any very great extent in London; I can only say in my own house that very little is drunk; I cannot find it in my heart to ask my family to drink it. The rateable area of the companies is very largely extending; London at this moment is growing with unprecedented rapidity through its whole circumference; above 100,000 a-year are being added to the population of London.

2900. Mr. *Neate.*] I wish to ask you a question upon another subject; during your survey of the Thames, you came in contact with the surveyor of the present Thames Navigation Commissioners?—I did; Mr. Castle.

2901. Will you be kind enough to tell the Committee what opinion you formed of the diligence and ability with which he discharged his duties?—I have had no opportunity of knowing anything of him in the discharge of his ordinary duties; I can only say that I was very much gratified by the very straightforward way in which Mr. Castle gave his evidence; he seems to me to have been very much calculated for the duties which he was required to perform.

2902. He gave you the impression of being an able and efficient officer?—As far as I have the means of judging.

2903. Well acquainted with the circumstances of the Thames?—Just so.

2904. Whatever defects there appear to be in the management of the Thames have arisen merely from want of money, or from want of knowledge?—Just so; they have arisen from want of money to carry out works which he considered necessary, and which he himself reported should be done.

2905. Sir *G. Bowyer.*] There is no blame cast on him in any way?—None whatever; if it were possible by any recommendation of mine to continue him in employment, should this Bill become law, I think the Conservators will have a very efficient servant.

Cross-examined by Mr. *Sargood.*

2906. You have spoken as to the water consumers being possibly willing to pay a very small sum per annum to meet the outlay of the water companies, if they raise the 10,000 *l.*?—Yes.

2907. I suppose you do that both on public principle and private advantage?—I would.

2908. Have you formed any idea whatever how small a sum you would have to pay proportionately to meet your share of the 10,000 *l.*?—I have not worked it out minutely.

2909. I mean how much a-year?—I do not know what number of thousands of gallons I consume; there are four people in my family, and if we take 20 gallons per head——

Mr. *Toulmin Smith.*] Thirty gallons a head is the average.

The *Witness.*] I am assuming that is 36,000 gallons a-year; supposing I use 50,000 gallons a year, then I should have to pay an additional eighth of a penny.

2910. Sir *G. Bowyer.*] Seven-pence a-year that would be?—Yes; I have 36,000 gallons, my figures give me.

2911. Mr. *Sargood.*] There are some figures connected with your Report which I want to call your attention to. In the Appendix, in pages 36 and 37, you set out copies of letters you have received from the water companies in answer to your application for information as to the number of gallons they are entitled to take, the quantity they really supply, and the number of houses that are supplied by them in their respective districts?—Yes.

2912. I suppose

2912. I suppose we may rely on these figures as being correct?—They are letters furnished by the companies themselves.

2913. I am taking the number of houses which are supplied by the five companies; they amount in the whole to 196,114; supposing we were to take an average of 1 *s.* for each house, that would raise a sum of 9,805 *l.* 14 *s.*?—Yes.

2914. You do not think it would be at all unreasonable that the public should be asked to pay so small a sum in order to raise so large an amount for the general benefit?—No, I do not; I should be very glad to see it added to the waterworks' companies' powers.

Cross-examined by Dr. *Adams*.

2915. I believe you came from Lechlade down to Oxford, or nearly so, by the banks of the river, while you were pursuing your inquiries for the Commission?—I do not remember.

2916. I fancied I had heard that you came from Lechlade?—I know that we did take a boat excursion, but I do not remember the geography sufficiently to be able to state; we did make a boat inspection.

2917. Did you not come down a considerable distance above Oxford?—I think we went from Oxford, and down the stream.

2918. Sir *G. Bowyer*.] You did not go above Oxford?—No, I do not think we boated above Oxford; I think we went from Oxford down the stream.

2919. Dr. *Adams*.] Did you not have an opportunity of seeing the state of the weirs and locks above Oxford?—I saw some of them; I did not think it at all necessary to see the whole.

2920. Can you tell us where you saw them?—I cannot without looking at my diary; I did not attempt to impress the names on my mind.

2921. You found that the weirs above Oxford were of a very slight and ineffective character, were they not?—Very rude and slight.

2922. So much so that you would say that there had been the least possible amount of work done by the old Commissioners?—Just so; the old timber weirs and (I forgot the names locally given to them; I think it is called "riming,") ought to have been all rebuilt.

2923. You stated that no attempt had been made for deepening the channel of the river permanently?—No; no systematic dredging had taken place, or any systematic formation or maintenance of banks.

2924. In fact, as the river stands at this present time, it is extremely injurious to the landowners on the banks?—It is liable to be injurious; it does, in fact, wash some land, and it is injuriously affecting the riparian owners.

2925. Not only by wearing away the banks but by the high level at which the water at present stands; is not that so?—The river has undergone the same action that is common to a great many rivers throughout England through a long series of years; it has silted its bed, and it has silted its banks simultaneously, until the banks and the bed of the river are above the adjoining lands, which are parallel on each side.

2926. And it has caused what is known by the name of hollow-backed meadows?—Yes.

2927. You found, did you not, that in many places the water levels had been so placed that they were absolutely at the top of the bank, and at the side of the river?—I saw some locks where the water is penned up until it is flush with the surface of the land at the side of the river, and it is consequently above the back land inland.

2928. So that the least quantity of water coming down, as it were, from either a flash or a summer flood, the water necessarily flows over the meadows of the riparian owners?—It does.

2929. And causes at times great difficulty?—It does; I saw the water at Lechlade running three or four feet deep over the back land; it had broken down some temporary banks which had been put up there.

2930. I believe you were at Oxford, or in the neighbourhood of Lechlade, at the time of one of the high floods during the last autumn?—I saw the water flooding hundreds of acres.

2931. From Oxford up to Lechlade it might be taken as being an inland sea,

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so to speak?—A great area was under water, and also within the last twelvemonth, right down to Windsor, great areas of land in the neighbourhood of the Thames were under enormous floods of water.

2932. To make that part of the river above Oxford which you saw an efficient navigation, very large works would have to be undertaken, would they not?—If that portion of the river from Oxford upwards is to remain navigable, I think the existing weirs and locks would have to be superseded.

2933. And that would cost a very considerable sum of money?—It would cost a large sum of money.

2934. Sir *G. Bowyer.*] When you gave that answer as to its being a great expense, do you mean by superseding the existing works, simply destroying them, or substituting new works for them?—If it is considered necessary to restore the navigation on that part of the Thames, I hardly think there is a lock or a weir there that ought to be left standing; I think other works would have to be substituted for them.

2935. Then, in fact, your answer as to the expense contemplated keeping up the navigation of the stream?—Yes.

2936. It did not contemplate improving the arterial character of the river without reference to navigation?—No.

2937. Dr. *Adams.*] You see on the map which is before you a considerable number of locks, which are represented as being requisite to be made for the purpose of completing the navigation?—Locks which now exist, you mean.

2938. No; at the foot they are locks which are ordered to be supplied there?—They are proposed new locks in 1791.

2939. Only those that are scored under, Mr. Castle has told us, have been since made?—Yes.

2940. I presume, if it were intended to make this a navigable stream, still above Oxford, at least, the works that are shewn upon that plan would be required to be made?—That I am not prepared to say; in fact, I could not give you any evidence which would be worth listening to upon the navigation, without having first made a proper survey.

2941. You have made no survey at all, I believe?—I did not look for any.

2942. Were you not told that there was no public survey of the River Thames?—I do not remember asking for it, because I did not consider that our Commission had that sort of power or jurisdiction which would enable us to give instructions to an engineer to make an estimate of anything that was proposed to be done, or which might be desirable.

2943. One of your recommendations is that the navigation from Lechlade to Staines should all be put into working order, and so maintained; that is in page 32; when you recommended that, did you contemplate that the navigation from Lechlade to Staines, including, of course, the navigation from Lechlade to Oxford, could be of that character to require the canalisation of the whole river?—"That the Upper Navigation, from Lechlade to Staines, be put into good order, and so maintained." I do not know that that contemplated what I have said might be necessary, a rebuilding; as I stated before, I did not inform myself as to what it would be necessary to instruct the engineer of the works to do, because I did not think that was any part of my duty; but this is the general opinion which I now hold, that it would be of advantage to the river, the riparian owners, and all interests connected with the river, to put in order and maintain that portion of the Thames Navigation.

2944. From point to point?—Between the points named there.

2945. You received a large quantity of evidence, I believe, from various parties, that above Oxford, for years past, navigation had virtually ceased?—We did.

2946. Have you any reason for believing, or do you believe, that there is any probability of a sufficient amount of traffic going over that part above Oxford to compensate any parties for the expenses that they would be at in making this part of the river navigable?—It might or might not; one view was this: the River Thames is perhaps the most beautiful river in the world; I do not think it is possible for there to be a more beautiful river; I think it would be a great pity, as you must establish works, to have the Thames anything but a ditch; you must maintain works of some kind, and I should be very sorry to see the means of navigating the Thames for purposes of pleasure done away with.

2947. Is it not quite clear that works which might be undertaken for a large navigation would be very much more expensive than those that would be undertaken for the purpose of preserving the purity of the water, or keeping up what you may call the pleasure traffic on the river?—Yes; I am not quite sure if I were the engineer that I should not advise that instead of putting up locks to admit barges, it would be better to confine it to the oldest form of lock that would admit or pass through a pleasure boat.

2948. You know enough of the river above Oxford to be aware that in many places it is extremely flat from the river?—It is in some cases.

2949. Supposing that for the purpose of navigation a depth of water was required, and it was found cheaper to make embankments than to dredge the river, would not the making of an embankment of that description, for the navigation alone, tend to injure the drainage of the district?—No, not necessarily.

2950. Presumptively would it not be so, if it were made for the purpose of navigation?—I cannot conceive that the Conservancy Board would embank the Thames solely for the purpose of navigation, and land-lock or block off the water from all the surrounding districts; I think that if they resorted to embanking instead of dredging, that they should take care to provide for the land drainage in connecting the upper ponds with the lower ponds.

2951. Whether they would do so or not, it is quite clear that the mode in which the Thames has been hitherto managed, has been very deleterious to drainage operations?—I believe so; I believe that the gradual silting up has had a great deal to do with what is done in many other rivers, which has tended to deprive the adjoining land of a great portion of its agricultural value; I believe it is possible to add treble to the rental of the adjoining lands of the Thames, by proper works.

2952. One of the statements of your Commission, before you come to your recommendations contained in page 28, is this; at the bottom of that page you are speaking about drainage, and what you say is this: "In short, what is required is river embankments, with main drains, flood gates, and sluices, to enable riparian proprietors to shut out, admit, restrain, retain, pass off the flood of the river at will; but such embankments must be systematically constructed under some general supervision"; is there anything in the proposed Bill which would enable landowners to see that works of the description which you have recommended, should be carried out?—I do not know that there is, nor do I know that it is necessary; I think there is a general drainage Bill, to enable the landowners to combine and to get an outfall.

2953. You are referring to the Drainage Act of 1861?—Yes, but this recommendation points to a power of embanking, not for the purpose of navigation, but for the purpose of preventing that flooding which takes place whenever the rainfall exceeds a certain amount, and, in fact, it contemplates doing what was done at some remote period, so remote that we have no record of it, and that is to prevent the flooding of the great marshes below London; the embankments there effectually prevent the floodings of thousands of acres, and have prevented that flooding from time immemorial.

2954. That is in a tidal river?—Yes; there should be power to prevent flooding where it is only intermittent by land water.

2955. You are aware that on the Thames below London there is no such thing as Thames water?—No; but I know there are vast areas that are 12 or 14 feet below the low-water line; there are hundreds of acres now situated in that way, and I believe there is a whole kingdom called Holland which is below the surface of the sea.

2956. You were referring to the General Drainage Act; are you aware that the millowners have no power to form drainage districts where there are Commissioners, unless the Commissioners who already exist choose to give their consent?—I think that is very necessary; you do not imagine that the Commissioners would refuse their consent to a proper scheme which will not injure the river, but will greatly benefit it.

2957. The Commissioners of the river have to look after the tolls, and their duty is to attend to the traffic of the river; they may choose to think that the millowners' interest, as regards drainage at a particular level may interfere with their tolls; what is to enable the riparian proprietors to obtain those powers

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which you say, in this respect, you are the absolute owners of?—I believe there is such a thing as a power of appeal to some higher authority.

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[The further cross-examination of the Witness was here adjourned until Friday next.]

Stephen William Leach, Esq., re-called.

S. W. Leach, Esq.

2958. Sir *G. Bowyer.*] You told us of a lock which was in a very bad and ruinous condition?—Yes.

2959. Where is that lock?—At Bell Weir, about a mile below Staines.

2960. Is not the state in which that lock is, doing considerable injury?—To the traffic on the river it is.

2961. It is a considerable loss to the Conservators, is it not?—Yes, it is.

2962. Can you say what tolls the Conservators are losing by that?—At the rate of 800 *l.* or 900 *l.* a-year.

2963. Are not the Conservators, therefore, desirous of repairing that lock at their own expense, with the least possible delay?—I am not prepared to say they will do it at their own expense; they are quite prepared to put it in a state to allow the traffic to be resumed again.

2964. Are they not ready and willing, at their own expense, to put it into such a state as will allow the traffic to be resumed, that is, as a temporary measure?—It is out of their district, and the Act of Parliament under which they act would not allow them to lay out money out of their district.

2965. Can you suggest anything which might be done to put that into a state of repair?—I could stop it in a few days.

2966. If you had the necessary money?—If I had the necessary authority to do so.

2967. But the Conservators are not prepared to incur any expense?—They have not the power of doing so.

2968. Mr. *Acland.*] The Commissioners could, if they had the money?—But they have not got the money.

2969. They might make an arrangement with you?—Possibly they might.

2970. Sir *M. H. Beach.*] Supposing it was merely to give power to the Conservators to repair that lock, they would do so?—They would do it instantly.

2971. Sir *G. Bowyer.*] There is nothing that you could suggest?—No; I can only say that I have directions from the Conservators to do the works as far as they have authority.

2972. Who can give you authority?—It is suggested that the President of the Board of Trade might do so.

Mr. *James Castle*, recalled.

Mr. *James Castle.*

2973. Dr. *Adams.*] I believe Mr. Castle wishes to correct an answer which he gave to Question 915; he is there referring to a railway which is nearly completed to the town of Wallingford, and he is asked,—"Do you know whether it is made on the broad guage or the narrow guage?" He replies, "On the broad, I think; I am not certain." He is most anxious to correct that, as it is a mistake?—It is on the narrow guage.

2974. What is it?—The branch railway that is now being constructed from Wallingford Road Station into Wallingford.

Friday, 15*th June* 1866.

MEMBERS PRESENT:

Mr. Acland.	Mr. Neate.
Sir Michael Hicks Beach.	Mr. A. W. Peel.
Sir George Bowyer.	Colonel Napier Sturt.
Lord Eustace Cecil.	Captain Vivian.
Mr. Milner Gibson.	Mr. Yorke.
Colonel Gilpin.	

THE RIGHT HONOURABLE THOMAS MILNER GIBSON, IN THE CHAIR.

Robert Rawlinson, Esq., C.B., re-called; further Examined by Dr. *Adams*.

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2975. I WAS asking you, when the Committee adjourned on Wednesday, with reference to the power in landowners to improve drainage districts where there are bodies of Commissioners having charge of the navigation, and your last answer to me was, "I believe there is such a thing as a power of appeal to some higher authority"; are you acquainted with the provisions of the General Drainage Act of 1861?—I am not; I have not studied that Act.

2976. Do you think it fair to the landowners of a district like that above Oxford, to be subjected to the decision of a Board constituted as is the Conservators sitting in London, 100 miles away from the place, without a power of appeal?—I think it would be exceedingly advisable, in case of difference, there should be the power of appeal, that if the landowners under the powers of the Land Drainage Act wish to carry out arterial drainage, and they considered that they were factiously opposed by the Thames Conservators, that there should be an outside power of appeal, to settle the difference between the two bodies.

2977. Then from that I may judge that, in your opinion, with regard to the upper part of the Thames, at least, the drainage questions are as important as the navigation questions?—I think that the land drainage question, as regards the upper portion of the Thames, is of the utmost importance; and taking the condition the Thames navigation is now in, and that any income is mere theory as to what it may become if restored, the land question is an absolute certainty, and is a most important question.

2978. Then, as far as you know, the present Bill provides no such power as that?—I have not attempted to analyse the present Bill.

2979. But you have reported in the last paragraph of your Report, "That powers be given to the Conservators to make embankments throughout the valley of the Thames, and carry out arterial drainage operations, the cost of such improvements to be met by a tax on the properties so improved"?—Yes; I may state that, in my opinion, if it were considered necessary, this recommendation might be enlarged, and it might run thus: that powers be given to the Conservators, or the proprietors, either individually or generally, to make embankments throughout the valley of the Thames, and to carry out arterial drainage operations; then that the cost of such improvements, if made by the Conservators, should be met by a proper tax; and if made by the landowners, they would provide it in their own way, under their own arrangements.

2980. Are you aware whether the Conservators, as at present constituted, have any power or any machinery by which they could carry out what you call arterial drainage?—You mean the Conservators having charge over the Lower Thames?

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2981. Yes?—They have the machinery of their engineer, and I assume them to have power to call in additional advice and assistance; and, if legally provided with the means, I conceive that the engineer would be fully competent to carry out such works as arterial drainage.

2982. Up to the present time, I believe, they have never done any works of that description?—I am not aware whether their Bill enables them to undertake such works.

2983. I mean under their own Acts?—I am not aware whether their own Acts even enable them; I may state that generally our rivers have been so neglected throughout England, and are in so neglected a condition, and such vast areas of land now to my own knowledge are depreciated in value, that I can only look with perfect astonishment on the fact that we have lived to this period in such a state of neglect.

Mr. *Phinn* having stated that he was willing on behalf of the promoters to agree to a power of appeal, after some discussion, upon the suggestion of the Committee, the consideration of the mode of appeal was postponed until the clauses.

Dr. *Adams* acquiesced in the suggestion, and withdrew.

Cross-examined by Mr. *Wilkinson*, on behalf of the Metropolitan Board of Works.

2984. I observe in your examination in chief by my friend, Mr. Reilly, you say, for the purpose of the Report on which you were engaged, you made a personal inspection of the river from Cricklade downwards to London?—Portions of the river; it does not mean every yard.

2985. But that would include, would it not, the district which is under the control of the Metropolitan Board of Works?—No; but I should say that it was not necessary, because I am acquainted with the district under the Metropolitan Board of Works from previous examination, and I am acquainted with the great schemes they have embodied and carried out.

2986. Do you know that as part of that scheme at this present moment there has been an expenditure of upwards of 4,500,000 *l.* in providing works for the purification of the Thames?—I am aware that a very large expenditure, amounting to some millions, has been incurred for high-level, mid-level, and is now being incurred for low-level sewers, embankments, and intercepting sewers for the upper portions, to purify the Thames within the jurisdiction of the Metropolitan Board of Works.

2987. Are you also aware that the number of sewers and storm overflows under the control of the Metropolitan Board of Works discharging into the Thames are 36 on the south side, and 30 on the north side, making a total of 66?—I do not know the exact number; I am perfectly aware that they have provided storm overflows on both sides.

2988. Then I think it must have been brought under your notice that the areas of the Board of Works are coterminous with those of the Registrar-General, and therefore, of course, they have no control over the upper part of the river?—From Putney to below Plumstead.

2989. In fact, the limits are coterminous with those of the Registrar-General?—Yes.

2990. I think you told my learned friend that you had no hesitation in saying that the whole of the Thames is seriously polluted by the sewage from the upper part of the river; I think you made use of a strong expression, which struck me, that actually the sewage of Oxford inflicts a very serious injury upon London?—That was said by the learned counsel on your left hand, Dr. Adams.

2991. No; I think it is your answer to Mr. Reilly; it is 2695: "And the river, instead of being a source of health, is becoming quite the contrary to the town?—It is; they are not only doing injury to themselves, but they are committing a mischievous and criminal injury upon the inhabitants of London"?—Yes.

2992. May I gather from that, that you consider it almost impossible, with regard to the upper part of the river, so far as jurisdiction is concerned, to prevent

vent the pollution by sewage?—In my opinion there ought to be jurisdiction over the entire water of the Thames, to prevent pollution, even beyond what is at present contemplated by this Bill; I think that it should take in not only the main river but its tributaries.

2293. In fact, I think my learned friend, Mr. Phinn, in opening this case talked of the river and its tributaries as being indissoluble for this purpose?—The river implies, of course, the river and its tributaries; there may be a jurisdiction set up over the tributaries independently of the main stream.

2994. I do not wish so much to direct your attention to the tributaries as to the whole course of the stream from Oxford to London, including our district?—Just so.

2995. Of course your observations would apply with still greater force to that part of the stream, if they included, as you say they do, the whole of the tributaries as well?—London has been compelled, and I use the word "compelled" advisedly, that is, the ratepayers of London have been compelled to expend these millions of money in purifying the Thames through the Metropolitan area, and if the upper portion of the river is to be left as at present, a great portion of that money has been foolishly wasted, because the very works that you have done here to accomplish the purification of the river, are works of a certain class and character which are required by the other resident populations of great towns on the Thames upwards to render the portions of the river within their area as pure as the Metropolitan Boards of Works have been compelled to make the river here.

2996. Then not wishing to repeat unnecessarily the evidence which you have been giving, of course that would be conclusive proof that your opinion is that there should be unity of management through the whole?—That is my opinion.

2997. Colonel *Napier Sturt.*] By the upper portion, you mean the portion above Staines?—I mean the entire upper portion of the Thames as defined in the Bill.

2998. Mr. *Wilkinson.*] So far as unity of management is concerned, do you think it would be desirable that the control exercised over the river of the lower part, should be made to assimilate as far as possible in its general principles with that adopted for the upper part?—Will you please to explain what you mean?

2999. I mean that the parties who have the control of the lower part should have the power of seeing that the control of the upper part assimilates with their system; so that the unity of management for the entire river, which you think so desirable, should be preserved?—Yes, that the Conservancy Board should be so constituted as to represent the lower and the upper part in some way, and have jurisdiction over the area placed under them.

3000. There would then be one area from the mouth of the Thames to the source of the Thames, and one system of management?—Yes.

3001. That you think desirable?—I do think it desirable.

3002. Of course, during these very extended investigations, the Metropolitan Board of Works have been brought under your notice from time to time?—Yes, I do not think we examined any officer from the Metropolitan Board of Works, but I am not quite sure whether we did not request Mr. Bazalgette to attend, and we were informed that his duties did not allow him to do so; I think we did not examine any officer.

3003. Is your acquaintance with the Metropolitan Board of Works sufficient to enable you to endorse the opinion which my learned friend Mr. Phinn expressed in his opening, when he said that we are a meritorious body?—I believe so; I believe they have spent too much money.

3004. The objects upon which we spend that money are the very objects which you are now seeking to effect with regard to the upper portion of the Thames?—Yes; I should add, that spending that money you are doing the finest work the world has ever seen, you are doing splendid work.

3005. Do you think it desirable that a body of such a character should be altogether shut out from representation in the Board of Conservancy now to be constituted by this Bill?—If you will permit me, I would rather leave that question to the judgment of the Committee.

3006. That must always be the case; but I should be very glad if the Committee would bear with me while I ask you, who are a gentleman of such great experience, to pronounce an opinion which possibly will prevail to some extent with

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the Committee when they come to form their own judgment?—As a rule, the services of clear-headed, practical men, are very advisable ; I would rather not express an opinion as to how the Commission should be constituted, as to who should be represented, and who should not ; I would rather leave it in more competent hands.

3007. Then, as I understand you, admitting the principle generally, you do not think you would like to pronounce an opinion whether or not the Metropolitan Board of Works should actually form a portion of this Conservancy Board ?—No, I would not, and for this reason; I may be asked a question as to whether fewer or more representatives should be put on for other parties, and I do not think it is my duty to pronounce an opinion upon that question.

Cross-examined by Mr. *Macnamara.*

3008. At present, I believe, the sewage works of towns are vested in the Local Board of Health ?—Where Local Boards exist, the sewage works are necessarily vested in them.

3009. That is so by the Public Health Act ?—By the Local Government Act.

3010. The Local Government Act is part of the Public Health Act ?—It is the Public Health Act in its right form.

3011. I suppose the inhabitants of towns will have to pay the expense of the works for the sewage irrigation ?—Either the inhabitants of the towns or the parties who may treat with the inhabitants of towns for carrying out sewage works.

3012. I see that in page 18 of your Report, you say with regard to the sewage question, "The necessary powers should be vested in that body which exercises control over the whole river ; constant local supervision being indispensable, Boards of Health might also have concurrent authority for the same purpose, exercisable within their local limits ;" do you still adhere to that opinion ?—Yes.

3013. I see also in page 32 of your Recommendations, you are of opinion that the Board should receive " An addition of an adequate number of representatives of the local interests of the Upper Thames " ?—Yes.

3014. You are still of that opinion, I presume ?—Yes.

3015. Mr. *Acland.*] Are you of opinion that some of the local authorities are chief offenders ?—Yes ; and if the Committee will allow me, I will give my reason for that, which may have some weight hereafter ; I wish to show the Committee how it is that the local Boards require some outside authority to enable them to do that which is necessary, for the knowledge of the local Board is powerless to act for the benefit of the community if there is an ignorant opposing ratepaying interest outside of them ; the town councils and the local Boards, who have already been compelled to resort to proper means of purifying sewage, and to do necessary works for the purpose of purifying the sewage irrigation, so far as my knowledge goes, have been forced by an outside legal authority ; the majority of the Boards have quite sufficient intelligence to know that they must do it, but they were powerless to do it because of the ratepaying interest.

3016. Mr. *Macnamara.*] On that account, you would not give the exclusive control in such matters to local Boards of Health ?—No.

3017. But, at the same time, looking at their position and their interest in the matter, are you of opinion that they should have some authority in the matter, together with the other bodies ?—That is a matter for consideration.

3018. I want to ask you a few questions with regard to the sewage clauses in this Bill, and that part of the case ; are you aware that for some years past the corporation of Reading have been desirous of having a complete system of sewage for their town ?—I am.

3019. Are you acquainted with the fact that in 1847 inquiries were made with reference to that, under an Act of Parliament, for making preliminary inquiries in certain cases of applications for local Acts, the gentlemen who made the inquiry being appointed by the Commissioners of Woods and Forests, one being Mr. Rickards, who is at present Counsel to the Speaker of the House of Commons, and the other being Mr. John Shaw, who was then the Official Referee

Referee of Metropolitan Buildings; you are aware of that inquiry having been made?—I believe there was an inquiry made at that time, but I did not pay much attention to the Report.

3020. Did you read the Report that was made?—No; I think I may shorten my answer by stating that I do not know that the Reading people have been at all anxious to carry out drainage; I do know that they have been very obstinate in not carrying it out.

3021. You are not aware then of the fact that they have expended 10,000 *l.* in an inquiry which is embodied ultimately in this Report?—I am not aware of that; I am aware that schemes for drainage have been submitted to the Local Board of Reading, and to their disgrace be it said, they have treated the plans with the greatest contempt.

3022. You are not aware of this Report pointing out, which I may tell you it does, although I shall have to bring it before the Committee in another shape, the very great difficulty that there is at Reading in the way of sewage irrigation for drainage?—I am not; but if the Report does point out great difficulty, and it very probably may, I should be very happy to inform the Reading people, through this Committee, that Reading may be very easily drained.

3023. I presume you mean by sewage irrigation?—I mean the entire sanitary arrangement; the draining, and carrying out sewage irrigation may, so far as my knowledge goes, be carried out easily, cheaply, and with very singular advantages to all the property in and about Reading.

3024. Will you be kind enough to state, as shortly as you can, the mode in which that can be done?—I must decline altogether to give this Committee a lecture on civil engineering, which would take me two or three hours.

3025. You are prepared, then, to stand upon the opinion you have given as an engineer?—I give the opinion, and stake my reputation as an engineer upon it.

3026. You have given the Committee also some evidence with regard to the different sewage irrigation works which have been established; how long have the Croydon works been established?—I really do not remember.

3027. Can you state about the time?—I think the principal Croydon works have been established four or five years, and the works at South Norwood more recently—about two years.

3028. Can you give the Committee an estimate of the expense attending the construction of works at Croydon?—I think it has been, in round numbers, on the lower works, from 12 *l.* to 14 *l.* per acre.

3029. I want you to tell me, if you can give it in the gross?—I cannot give it; if I recollect rightly, what the surveyor told me it is from 12 *l.* to 14 *l.* per acre; I think the South Norwood works cost about the same.

3030. How long have the Worthing works been established?—This is the second year of producing crops.

3031. That is to say, the second year in which you have been in operation?—The second year in which they have produced beneficial results—crops.

3032. Can you give the sum total that the works cost at Worthing?—No: the first capital was 10,000 *l.*, and the capital has just been doubled—that will be 20,000 *l.*

3033. You think the works will cost altogether about 20,000 *l.*?—Yes, but that includes the value of nearly 100 acres of land lying within three quarters of a mile from the town.

3034. I observe at page 32 of your Report, you say that power should "be given to local authorities to take land compulsorily for the purpose of sewage irrigation, to an extent not exceeding one acre for every 50 persons whose sewage is to be applied."

Sir *G. Bowyer.*] That is a mistake; it should be 150.

The *Witness.*] No, it is quite right.

3035. Mr. *Macnamara.*] "That, subject to proper safeguards to prevent abuse, power should be given to local authorities to take land compulsorily for the purpose of sewage irrigation, to an extent not exceeding one acre for every 50 persons, whose sewage is to be applied;" will you explain that?—I think if you just consider the words of the clause, that the explanation is in the clause; it says, "to prevent abuse." The town authorities might have compulsory powers and they might serve notices upon landowners, and they might buy a very much

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larger area than was necessary for the purpose of sewage irrigation; and, therefore, we say we think 50 persons to an acre is ample and abundant.

3036. Mr. *Acland*] Do you mean to say that one acre is enough for 50 persons?—We mean to say that one acre is quite enough for 50 people; and if the Local Board wanted to buy a larger area than one acre for 50 people, we believe it might be buying that for some other purpose, beyond the purposes of irrigation.

3037. Sir *G. Bowyer*.] We want a little more explanation of that. You mean that you want to prevent their buying more land than is wanted; but you do not mean to say that one acre is required for 50 people?—We say in another part of this Report that they may effectually purify the sewage by using one acre to 150 people.

3038. I do not understand quite how you reconcile the two?—Land varies in its character and in its class. If there was a large area of poor common land, that would be greatly benefited by being reclaimed, you might so use it for farm purposes that you might apply sewage irrigation to one-half, and employ the other half with the stocks, if it was a dairy farm; if a town wants to work in the cheapest way, they may consider themselves safe with one acre for 150 persons.

3039. Therefore, as I understand, 50 persons to an acre is the minimum, and 150 persons to an acre is the maximum?—It is the maximum in one way, and the minimum in another way; that is, whether you make it land or material.

3040. You do not mean to say, of course, that in every case it is necessary to have an acre to every 50 persons of the population, because, of course, in a large town that would render irrigation almost impossible?—No; but this is advisedly done; and when you have the authority of such great men as Liebeg and those who follow him, who declare that the sewage shall be put back again upon an area equivalent to that from which the food has been taken, and when it has been seriously contemplated to take two or three millions of acres to apply the sewage of London to, it is to meet that objection—it is to put a check upon the area of land that a town shall look for; and then we say they may utilise effectually, and purify the sewage effectually, of 150 people to one acre—that is, one-third of this; and then when the Local Board makes application, supposing it made application, for as many acres as would represent to each acre 50 persons, the Conservators say, you can utilise the sewage of 150 people on one acre, or one-third less; for what reason do you want this land, why do you want to come to the maximum? And then the authority, having power to decide, might stop them from going even to the extent of one acre to 50 people, and might compel them to be content with 150 people to the acre.

3041. If you took an acre to every 50 people that would be 20 acres for 1,000 people in a large town, the whole country would be devoted to the utilisation of sewage, and so render the thing almost impossible to work?—That is more than we should say is necessary; we say you may put 150 to an acre.

3042. You think that 150 persons to an acre are quite enough?—Yes.

3043. Captain *Vivian*.] How many acres would be required for London at the rate of 150 persons to an acre?—In my evidence before the Sewage Commission I stated that 30,000 acres would be sufficient to purify the sewage of London; that was modified by Mr. Laws and Professor Way; at that time there was a scheme before the Select Committee which proposed applying sewage over millions of acres.

3044. Mr. *Macnamara*.] One acre to 150 persons would require about 200 acres for Reading alone, its population being 30,000?—Yes.

3045. In your judgment, would it not be advisable that more should be taken than one acre for 150 persons?—No; I do not think it would be at all necessary.

3046. Would it be advisable?—Neither do I think it would be advisable; experiments have been made with regard to the application of sewage, taking measured volumes from 1,000 tons per acre and gradually growing up to 10,000 tons per acre, upon the Rugby experiment; but at Edinburgh, where they have nothing to pay for it, and where they have nothing to control them, they have put as many as 75,000 tons per annum upon an acre; 100 tons represent an inch of rainfall for a single acre, consequently 1,000 tons represent 10 inches, 5,000 tons represent 50 inches, 10,000 tons represent 100 inches; you may think it is an overwhelming volume to put 100 inches on one acre of land, but remember it is put on during 365 days, and a great portion of it flows off, leaving a residuum.

3047. Captain *Vivian.*] At the rate of 150 persons to an acre, how many tons would you have to put on each acre?—That would depend upon the water supply; you must take 224 gallons to a ton, and in proportion to the water supply would be the sewage discharged from the sewer.

3048. You would require a water supply to purify a town?—Yes; in some towns there is a water supply of 20 gallons daily to each person; I think in London we have 30 gallons a day for each person; very frequently the larger volume of water does not injuriously affect the sewage, but merely requires larger areas of land to get beneficial results.

3049. Lord *Eustace Cecil.*] Does it not depend upon the climate very much, for instance, the rainfall at Glasgow is greater than it is in London?—Vegetation, we know, is governed by climate, but you have irrigated crops growing most luxuriously, both in the damp climate of Devonshire and in the northern climate of Scotland also, irrigation is beneficial wherever the operation has been carried on in England; it is true that we have not got the Italian sky which shines over the plains of Lombardy, where there are three or four millions of acres irrigated, but the experiment at Croydon, in my opinion, settles the question as regards climate; you can put sewage on land beneficially and as continuously as time, that is as continuously as the tick of the clock; night and day, winter and summer, dry and wet, frost and snow, it never need to cease going on, and to go on beneficially, and with the effect of purifying the sewage; that is the question to be solved; of course the produce to be got from the land will be increased or diminished by the amount of sunshine, temperature, and management.

3050. Mr. *Peel.*] And the rainfall?—Very probably the rainfall.

3051. Have you any idea what is the weight of water that falls under ordinary conditions upon an acre?—An inch of rainfall is 100 tons.

3052. Lord *Eustace Cecil.*] In that case you would have a much greater volume of water issuing out of your sewer throughout the year, taken on the average, in a climate where there is a great rainfall in one part than in another part where there is not?—Not necessarily; the first principle in sewering is this,—before an engineer attempts to sewer any town or any district, he should inquire how nature has provided for passing off the rainfall and the surplus surface water, and as little as possible he should interfere with that; his sewer should do the work of sewering, which is to take away the surface water of the yards, the refuse and waste water of the houses, and surface water of the streets when he cannot otherwise pass it away without mischief; but he should never under any condition make a natural water course into a sewer, or turn into a main sewer the water of a natural water course, in draining a large area without considering fully what are to be the effects and consequences upon his works; he must as much as possible confine his sewer to sewer work proper, and then he can get the maximum; that is to say, in wet weather that it shall not pass more than five or six times the volume of water that it would in dry weather.

3053. Mr. *Macnamara.*] In fact, the question of water supply has an important bearing upon the question of sewage irrigation?—The question of water supply would have an important bearing taken in that light, and the question of waste water also.

3054. Sir *G. Bowyer.*] The impression made upon my mind by your evidence is that the authorities of the towns would have no difficulty at all in getting rid of their sewage with very little expense to themselves; am I right in that?—My opinion from my experience is this, that any town may get rid of its sewage in two ways, either by gravitation or by pumping; but if it has to resort to pumping, it may do so with a fair chance of saving itself; the amount of profit will depend upon the height of the lift, the price of coals, and the extent of engine power which is necessary, because with a small engine power you cannot pump so economically as with a large engine power; the engines upon the banks of the Thames, I believe, lift something like from 80,000 to 90,000 gallons of water 100 feet high, at a working cost of 1 *s.*; that cannot be done with small engines.

3055. In a town like Reading, of course there would be very little difficulty in getting rid of sewage?—I believe Reading might utilise its sewage very profitably.

3056. Without costing anything for pumping?—I believe so, and I believe Oxford might do the same.

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3057. Mr. *Macnamara.*] Must there not be pumping?—Not necessarily; I should not like that answer to be taken positively; I would not like to commit myself to it.

3058. For instance, I suppose you are not acquainted with the land that could be taken for the purpose of sewage irrigation?—I cannot say without making a special survey. I walked round Reading, and I will undertake to say that there is land there that might be very greatly improved in value by sewage irrigation.

3059. Do you not know that the Thames Purification Company propose to go a distance of four miles from Reading and pump to a height of 160 feet?—I must have known it, because it has been given to me in evidence; but I have forgotten it.

3060. Can you recall now to your recollection that that is the fact?—Yes, I can; I can quite conceive it will pay any person to go that distance to pump the sewage of Reading that height.

3061. Do you know what land costs per acre at that distance from Reading?—No, I do not; I believe that Reading is in itself, and would be in itself so beautiful a town and so desirable a place of residence, that land would command a very high value.

3062. I believe that land which is subject to sewage irrigation is peculiarly adapted for the growth of Italian rye grass?—Italian rye grass proves to be a most profitable crop as far as we know at present; but sewage is very well adapted for the ordinary twitch grass, which is one of the most succulent grasses you can grow.

3063. Do you know whether there is much Italian rye grass sold in Reading?—What is the population of Reading?

3064. Thirty thousand?—Do they use milk there; because if the Reading people drink milk, I think there are the means of selling all the grass that they can grow, because the most profitable course that can be taken is to turn grass into milk by feeding the dairy cows with it; and if Reading cannot consume all the milk that they can produce, it will go to some of the towns lower down.

3065. Have you made inquiries whether there would be purchasers found for this Italian rye-grass?—No; if the farm is properly managed cows would be fed with it; it would not be allowed to grow and rot upon the ground; I cannot imagine that grass worth 1*l.* per ton would be grown and allowed to rot down.

3066. I see in the fourth paragraph of page 18 of your Report, you say this: "In order to secure the river from sewage pollution, new legislative measures are necessary; at present the Thames Commissioners have no power to prevent any pollution, unless it is injurious to the navigation; the Conservancy Board have considerable powers to prevent pollution in general, but the right of persons to let ordinary sewage flow into the river, is reserved." I have looked through the Acts, and that appears to be so, that the right to let ordinary sewage flow into the river at present is reserved to persons under the Conservancy Acts. Now, let me call your attention to page 32, in which you state your recommendations; in the third recommendation you say, "that after the lapse of a period to be allowed for the alteration of existing arrangements, it be made unlawful for any sewage unless the same has been passed over land, so as to become purified, or for any injurious refuse from paper mills, tanneries, and other works, to be cast into the Thames between Cricklade and the commencement of the Metropolitan sewage system, and that any person offending in this respect, be made liable to penalties to be recovered summarily;" the Metropolitan sewerage system, I believe, extends to Putney?—I believe it does.

3067. And this Bill, that only deals with the river above Staines, will leave the parts between Putney and Staines exactly as they are?—If that is so, the Counsel and Parliamentary agent will explain it.

3068. It proposes to deal with the river above Staines, between Staines and Putney, which is the commencement of the Metropolitan sewerage system; it will be left exactly as it is, the Conservancy Board having no right to interfere; it is between Putney and Staines that the water companies draw their supply, is it not?—I think it is.

3069. Thames Ditton and Kingston, is it not?—Yes.

3070. Reading, as we have heard, is more than 40 miles above the water supply?—Yes.

3071. Then, in fact, as this Bill proposes, there should be a prohibitory clause with regard to Reading, which is 40 miles above the water supply, and that at that part the water supply should be left just as it is with the ordinary sewage to flow in?—If the Bill is defective, of course it can be corrected.

3072. I observe that this Bill proposes to deal with rivers within three miles of the Thames?—With the tributaries.

3073. That being so, all the upper part of those tributaries more than three miles from the Thames will be left exactly as they are?—That is so.

3074. Take the Kennet, for instance; supposing you have your prohibitory powers as to sewage, with regard to three miles, enlarged to four or five miles, that will be left exactly as it is?—Just so; if you look at this Report, you will see it is headed "First Report;" it is in the contemplation of the Commissioners making a minute inquiry, similar to the inquiry held upon the main Thames, holding meetings, taking evidence, and making a Second Report, which Second Report will embrace the very tributary under consideration.

3075. Does it not then occur to you that it would be better until the Reports are completed, and these inquiries are completed, to defer the sewage clauses of the Bill, rather than deal with it piece-meal in this manner?—The Committee will decide that, and not me.

3076. With regard to the powers given by this Bill, if the Bill passes I observe that any fresh drain into the Thames could be stopped at once, that is to say, by section 47; if that were done before there is any general system of sewage for a town, I suppose the only remedy would be that that house should have a cesspool, there being no general system of drainage?—If you will allow me to correct the word cesspool, I would alter it into the word tank, and would say that it should have a sewage tank.

3077. But you are of opinion that that is a most mischievous thing to have in towns, are you not?—In towns unquestionably, but individual houses, or groups of houses, that is, two or three, might, with great advantage, have a sewage tank, and irrigate the adjoining land from such tank.

3078. Do you mean that one house should apply a system of sewage irrigation?—It might, with very great advantage.

3079. Do you think wells would suffer at all if they had cesspools?—Not necessarily; the owner of the house would take care, I anticipate, that his sewage tank was in such a position that it might be made perfectly impervious, and so placed that he could use the sewage from it without any chance of contamination to his well.

3080. But if he did not use it for sewage irrigation, as you say, I suppose it would be very objectionable to have such tanks in a town?—Most unquestionably; it would tend to poison himself, and his neighbour afterwards.

3081. You are aware that there are no compulsory powers in this Bill to make him use it for sewage irrigation?—If you have compulsory powers to prevent him polluting the river he must find out for himself the way of utilizing his sewage.

3082. I understood you to say that London is one of the healthiest cities in the world?—I believe, at this moment, according to the Registrar-General, *the* healthiest great city in the world.

3083. And that is so, notwithstanding the sewage falls into the Thames in the way it does?—Notwithstanding that.

3084. Sir *G. Bowyer.*] Do you think that the limit of three miles is sufficient, or would you extend it to four miles, or even five?—I think that it is sufficient for present purposes; but, if upon our second Report, the Board of Trade and Parliament may think it is necessary to extend the jurisdiction of the Conservators, or to establish a new jurisdiction for the tributaries, I think I would not disturb the three miles limit.

3085. Lord *Eustace Cecil.*] Are there towns of any importance upon the tributaries?—There is a list of all the towns on the tributaries given in this Report, at page 8; the total number of cities, boroughs, towns, parishes, and hamlets, is stated to be 1,001, with a population of 888,088.

3086. Mr. *Neate.*] Does that number include villages?—Yes.

3087. Sir *G. Bowyer.*] Have you any idea what is the population on the tributaries?—The population on the main stream is 172,120, which deducted from 888,088 will give 715,968 as the population on the tributaries.

3088. Have you any idea how much of that population is within three miles,

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and how much beyond?—No; we did not draw up our Report in conjunction with the gentleman who drew the Bill.

3089. It would be very material to know what part of the population upon the tributaries is beyond the three miles?—I believe the greatest portion of it is beyond the three miles.

3090. Do you not think that it would be reasonable to extend that limit to four or five miles?—I do not see any objection, except that you must take in the tributaries; and I think it would not be wise to disturb the arrangements of the Bill, because the tributaries must be reported upon, if we do our duty; we made this Report rather in a hurry, it is called the First Report; we had not time to go to the tributaries.

Re-examined by Mr. *Phinn*.

3091. I will not go into that part of the subject which relates to the company, for a reason which will appear presently; with regard to the landowners' question, which is the only question, I think, I need trouble you about, do you think the suggestion that if the landowners' wish to form works under their own drainage commission, and the Conservators deal with them as to the feasibility or propriety of the works, and the matter is left to appeal, that that would be a satisfactory proceeding?—Yes, I think so. I may explain that the only differences which could possibly arise between the owners of land and the Conservators as to their drainage, would be as to the point of admission to the Thames, whether it should be at one point or at another; as to the form of the works, and the control to be established over those works; because in drainage areas, where land is known to be below the flat level, you must have works of such a character, and you must have provision made for maintaining them, or you might injure the river banks, and injure other persons' property.

3092. In fact, the effect of a bank at some distance from the river might have a very visible effect in flood times on the course of the river itself?—It might flood other land below; it might affect rights: it might affect property external to the land drainage.

3093. It may make a current where there was no current before, or less water where there was a current?—Just so.

3094. Now, with reference to what Mr. Wilkinson said, you decline to give an opinion as to the constitution of the Commission; that is a matter you would rather leave to the Committee, because many considerations enter into it which you have not attended to?—A great many; if the Committee choose to ask my opinion, I can give it to them; but I would rather leave it to them, and not give an individual opinion affecting so large a question, which is purely a question for the Committee, in my opinion.

3095. The Bill, I may tell you, is limited to the district under the existing Commission: and the blot suggested in the Bill, on behalf of Reading, is that, although we allow the portion between Staines and the beginning of the jurisdiction of the Metropolitan Board of Works to remain intact, we deal with Reading; of course, we are founding our Bill upon your Report, and that is confined to the district under the jurisdiction of the existing Commissioners?—That is so.

3096. You know the river well enough to be able to tell me that, as between Staines and Hampton, where the water supply commences, there is no great town, is there?—I think not.

3097. Kingston is the first great town below the point of supply?—It is.

3098. Is Staines a town of any magnitude?—No.

3099. However, there is no great concentration of population in that district?—There is not until you come to the large towns above.

3100. Windsor would be the first large town, I suppose, in this district going upwards above Staines?—Windsor is the first.

3101. Datchet is a small village?—Yes.

3102. Then you come to Windsor and Eton?—Yes.

3103. I do not observe that there is any representative of those interests objecting to our dealing with the sewage?—No; you then get Maidenhead, Great Marlow, Henley, and so you get up to Reading.

3104. My learned friend was good enough to refer me to the Report which was made by Mr. Richards and others on a scheme which was propounded as far

far back as 1847; was your attention directed to that scheme?—I think it was named to me when we held our inquiry in Reading; but 1847 was previous to the first Public Health Act, which came into operation in the autumn of 1848; I should say that any scheme of sewage propounded for Reading in 1847 I would advise the Reading Town Council to bestow no more attention upon, but to get a scheme devised by the knowledge existing now.

3105. You have answered what I was going to put to you by anticipation; my learned friend asked you, by way of *reductio ad absurdam*, what you were doing with the rye grass; if the people of Reading are not milk consumers I believe we London people are?—Yes, and we should be very glad to have the milk.

3106. Are you aware that milk is brought a much greater distance than 40 miles up to London?—Yes, it is.

3107. I believe within an area of nearly 100 miles?—Yes.

Examined by the *Committee*.

3108. Mr. *Acland*.] Do you think it better for the interests of the landowners in the upper part of the valley of the Thames to leave them to make their own arrangements under the Lands Drainage Acts, or any other power which they may have, and to come to the newly constituted Conservancy Board for permission to make outlets into the stream, rather than to vest the control of the land in the Conservancy Board?—In my opinion it would be much more advisable to vest the control of the river in the Conservancy Board, and to divest them of any authority to deal with the adjoining lands other than as controlling the mode in which the Thames shall be entered.

3109. You do not advise, therefore, any responsibility of an agricultural kind to devolve on this Thames Conservancy Board?—In my opinion it would be better without it; I think, if the landed interest does not understand its own position with regard to the effect of floods, and the deteriorated quality of land which is flooded, that this Board should have no power of controlling them, other than for purely river purposes.

3110. Looking at the general interests of the inhabitants on the banks of the Thames, to which your attention has been drawn, will you point out to us the different parts of the Thames at which mischief ensues to the inhabitants in the towns or villages arising from floods, beginning at the bottom and working upwards; can you point out any instances of mischief of that kind?—I really have not so far studied the geography of the Thames so as to be able to point out places of detail.

3111. Can you not point out any notable instance?—Windsor and Eton are very seriously and injuriously affected by the existing flooding of the Thames. It is partly in consequence of things which have not been done, and partly in consequence of things that have been done. The things that have not been done are these: the channel has not been maintained at its proper depth, the banks have not been properly regulated, and the weirs have not been properly regulated either. The things which have been done are these: railway embankments and railway bridges have been allowed to cross the Thames, which notoriously back the water up injuriously upon the land above. If there had been a Thames Conservancy Board empowered, as I hope this will be, to take those questions into consideration, such a state of things could not in future come about.

3112. Do you think if a Bill could be passed constituting a good board of management over the main channel of the Thames, that they will be the best persons to be entrusted with the duty of preventing these floods affecting Windsor?—I think so.

3113. Have you considered how you would adjust their duties with regard to the landowners in that neighbourhood. Would you give them authority to deal with the floods, or would you place the initiative in the hands of landowners, subject to the control of your Board; have you thought that matter out?—I have thought of the matter in this way, that the Thames Conservators would not have power by their works, in my opinion, to prevent floods entirely, but they can very much improve and probably very much reduce the effect of floods by proper works; but flooding might be contingent then during a heavy rainfall,

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unless the Local Boards owning property, and the adjoining landowners owning land, come into a general system of embanking the districts now flooded.

3114. Would you give this new Board, which is the result of your Report, a merely initiatory power of that kind, or would you make them wait for the initiatory measures taken by the towns or the landowners?—I would make the clause, if possible, permissive, for we do nearly everything in this country permissively. If there are legislative powers that may be used more beneficially, the public sooner or later will see the effect of them. Knowing the feeling in this country, and knowing the difficulties, and knowing the opposition that would arise, I would not arm the Conservancy Board with absolute power to prevent the flooding of towns and lands by constructing what they would conceive to be necessary in the way of embankment works, and levying, as they necessarily must have the power of doing, a compulsory rate to be charged by themselves upon the adjoining landowners.

3115. Sir *G. Bowyer.*] In fact, you do not contemplate that the Thames Conservancy should take the duty of the drainage of the land, but what you contemplate for the Thames Conservancy would no doubt benefit the landowners by improving the outfall, but would not that improve the drainage of the land for agricultural purposes?—I would wish to draw a distinction in this way: I do not contemplate that the Conservancy Board should be armed with such power as the Government of France take upon themselves, that is to say, to regulate everybody's affairs in the way a central authority dictates, and according to reports and works advised by a central engineer.

3116. In fact, the Thames Conservancy mind their own business, and leave other people to mind theirs?—They should have a permissive power to enable them to facilitate the landowners in carrying out the necessary works.

3117. Mr. *Acland.*] Is there any great difficulty with Reading with regard to floods?—Reading is very liable to be flooded; I should require, before giving an answer as to what should be done to prevent it, to make myself better acquainted with it.

3118. Your attention was a good deal directed to the state of things about Oxford?—Yes.

3119. Will you explain your views as to the sanitary condition of Oxford, owing to the present state of the Thames?—The land in the vicinity of Oxford, house property, college property, the mills, and all connected with Oxford, in my opinion are most injuriously affected by the present state of things: every time there is an excess of rainfall in the upper part of the Thames, the waters come down unchecked, and flood vast areas of land; they flood the street communication, to my own knowledge; they leak up into the town of Oxford and into its suburbs; and they flood up through the cellars of the dwelling houses.

3120. Now with regard to these other evils, do you think they arise at Sandford, or Iffley, or above?—Sandford, I believe, is the key of the whole; the intermediate dams are most inefficient.

3121. It has been suggested to this Committee that the obstructions of the Iffley Locks ought to be entirely removed, and an extensive system of dredging carried on from Oxford down to Sandford. That would do a great deal of good to the river about Oxford, would it not?—That is my opinion; I would lower the weir and all the works at Sandford, and remove any intermediate locks above; I would lower Sandford Lock, and lower the lasher and give a better outfall for the flood water that comes down, and I would dredge the intermediate channel; that would be quite necessary, or you would destroy that beautiful reach for boating purposes; you must dredge it down a given depth for pleasure boating to be established.

3122. Are there obstructions now between Oxford and Port Meadow?—There are paper mills and other mills about which we took evidence.

3123. Do you think that this Conservancy Board will be competent to deal with all those questions under the powers generally, with some modifications provided by this Bill?—I think that the weirs and all connected with the river proper should be vested in the Conservancy Board, and then they necessarily would have power to deal with the question.

3124. Two of the Commissioners differed from Mr. Harrison, the third Commissioner, upon a certain point; I want to ask you two or three questions about Mr. Harrison's opinion; very near the bottom of the 33rd page of the Report,

Mr.

Mr. Harrison says, "The chief interest in the maintenance of the Upper Navigation is that of the towns and lands on the banks of the river;" is that part of his statement which you differ with?—Yes, myself and Professor Way differ with this conclusion, because we considered that the previous conclusions and recommendations provide for it; that it would not be just to impose on the water companies a disproportionately heavy tax, I quite agree. Mr. Harrison says, "But unless the Conservators have ample funds at their disposal, the Upper Navigation will not be properly restored, or, if restored, will relapse into decay;" and then Mr. Harrison proposes to tax the riparian proprietors.

3125. I asked you a definite question, and I should feel obliged if you will give a definite answer. Do you think he is wrong in stating that "the chief interest in the maintenance of the Upper Navigation is that of the towns and lands on the banks of the river." Do you differ from that?—I differ with him in saying that that is the chief interest; I think the interests are so intimately bound up, that you cannot separate one from the other.

3126. You think that the Metropolitan interest is quite as important as the interest of the towns and lands on the banks of the river?—I think that one and all are bound up together.

3127. Do you differ with him especially in his recommendation: "That the collateral security authorised to be given by the Conservators should include a tax upon houses and lands within a few miles of either margin of the Upper Thames;" do you differ from that entirely?—Entirely.

3128 Will you be kind enough to state your reasons specifically; if the improvement in the arterial drainage is very great, are you prepared to say why the owners of the lands benefited should not pay something?—If the arterial drainage is improved, the arterial drainage would only be improved by defined works, and those works would necessarily be paid for because they were devised by the owners, and, consequently, a rate would come upon them irrespective of Mr. Harrison's recommendation.

3129. My question is, are they not deeply interested in the special improvement of the arterial channel of the river?—No, I think not; I do not think that putting that river in the position that we contemplate improving it, as it would be the duty of the Thames Conservators to do, namely, to improve it to the utmost, that that would touch the bordering estates in such a way as to enable you to levy a distinct rate upon them for that work.

3130. Do you mean that side channels, or catch-water drains, will, in point of fact, be the works done, and which they must do themselves?—Yes, if the bordering states are to be benefited in the way that I contemplate, it would not be by any works in the main channel of the river, because the main channel of the river would necessarily require some specially designed and defined works, for which they necessarily would have to pay.

3131. But it may make this difference, that by deepening the channel by dredging it, they might be able to make a main outfall two miles shorter, and perhaps it would save all that expense?—I think that is one of the advantages that they might fairly be allowed to avail themselves of, without making a special tax upon their pocket for it.

3132. You state in your third recommendation, "That this body be the existing Conservancy Board, provided that the Board receive an addition of an adequate number of representatives of the local interests of the Upper Thames; and such representatives to be elected by the persons who now constitute the Thames Commissioners." Without asking you to do what I think you very properly say is the duty of the Committee, namely, to consider the constitution of this Board, I will ask you this question,—are you at the present moment prepared to adhere strictly to the words of that recommendation after what has been said in this room, and to say that we ought to confine the constitution of that Board, so far as we add to its members, to the existing Thames Commissioners; do you not now think that that should be a more open question than you thought when you made that recommendation?—The constitution of the Board, as I understand it, is to consist of 18 existing Conservators of the Thames, and to add three from the Upper Thames to represent that interest

3133. I am not speaking of the Bill; I am speaking of your recommendation, which goes to this effect, that the existing Conservancy Board should be increased, and that the whole of that body should be elected by the Thames Commissioners; what I want to ask you is, whether, since you made that recommenda-

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tion, you do not think grounds have appeared for reconsidering that, and making it rather an open question why other parties should not be constituted?—This recommendation, I believe, arose out of our own examination; and looking about for a method by which we could come to a solution of the difficulty, I think it was principally an idea of my own that the existing body should form that element.

3134. But not necessarily the only element?—No.

3135. Therefore, so far as your opinion goes, which will have weight with me and probably with the other members of the Committee, we need not feel ourselves bound by that recommendation, as expressing your matured opinion as to who may be the authorities constituted under this Bill?—If it can be shown that there are other persons intimately interested in the good government of the Thames, who could fairly be entrusted with an effective power, such as the members of local Boards, I would not so object.

3136. Do you think that a town being put to a considerable degree of expense is any reason why they should have any influence on the Board, or do you think it reasonable that they should be left to manage their own affairs independently?—The towns situated on the banks of the river cannot be divested from the beneficial interests of the river; and if you can give the towns so situated, and which are intimately incorporated with the river in their works, an elective power, I would not personally object, so that it is not made cumbersome.

3137. I put the next question to you in consequence of an opinion expressed by a gentleman who takes a great interest in the development of the Thames and the control of the Thames; do you think it desirable to place in the Board of Trade, or some administrative department of the Government, some supervising power to see that this Board does really keep up to its work and properly discharge its duty, or do you think we ought to trust entirely to the elective principle without any kind of Imperial control?—No; I think it is very advisable indeed that there should be a form of Imperial control, and that the Board of Trade, in my opinion, would be the best tribunal to appeal to.

3138. Sir. *G. Bowyer.*] In what cases?—In cases of dispute between either the town authorities for sewage purposes, and the landed interests for land-drainage purposes, and the Conservators, who may have charge of the river.

3139. I understood the Honourable Member to ask you whether the Board of Trade was to have a control over the Conservators; that is a different thing from an appeal?—Only in the case of an appeal.

3140. Mr. *Acland.*] But, in cases of great sluggishness and neglect, would you not give an inspecting power to the Board of Trade to bring public opinion to bear upon the local Board, or upon the Conservancy Board itself?—No, I can say that, decidedly, after having had a very wide experience of our institution, such a control would practically defeat every purpose for which it was established.

3141. Would you object to some such arrangement as this, founded upon the experience of the Poor Law Commission; you are aware, of course, that an Assistant Poor Law Commissioner has a right to attend Boards of Guardians?—Yes.

3142. And that by attending those Boards of Guardians he is enabled to bring to a remote corner of the district the best experience of England?—Yes.

3143. Would there be any objection to the officer of the Board of Trade having a right occasionally to be present at the meetings of the Conservancy Board?—No; because I do not think the interests are at all parallel with those of Boards of Guardians; the interests to be discussed at the meetings of the Thames Conservancy work so differently from the interests of Boards of Guardians, that I do not think it would be beneficial.

3144-5. Sir *G. Bowyer.*] Is not the Board of Trade already represented on the Conservancy Board?—I do not know.

Mr. *Sargood.*] One member is nominated by the Board of Trade.

3146. Mr. *Acland.*] Have you not in your visits to these different towns met with a feeling of great unwillingness to have the whole of the interests of the Upper Thames committed to these London gentlemen?—No doubt that is so.

3147. Is it not necessary to bear up against that in some way, and to secure to those remote interests that, if they are in a minority at this Board, that at least some Government officer or other will protect their interests, and that at least

least they shall not be swamped by anything like what I may call City obstructiveness?—If you will excuse me for doing so, I will give you a reply that I have given over and over again to a similar question, where it has been objected that a Board once established as a local Board might not go on with the necessary works, and, in fact, with the works they are interested to go on with, should not some corporate body come in. I have always fought against it, because I am quite sure it would defeat the purpose intended; I think it is far better to leave the locality, stupid as it may be, until a serious question arises; for I have found that where a minority has had the power to force an unwilling majority to their benefit, that they had far better have left them alone, for when that majority is overcome by a minority they will, in vengeance, work mischief, and throw the question back for a time.

3148. There have been some suggestions made, which I confess I do not know anything about, as to the probability of spring water being short in the upper branches or tributaries of the Thames; will you favour us with your own opinion on that subject?—It has been mooted over and over again in this country, and it has been discussed pretty largely, that our land drainage operations and our general cultivation are so altering the character of our climate that they are diminishing the spring water and reducing the flow of our rivers; I do not believe that that occurs, or that the idea will bear fair examination.

3149. Then you think this Committee need not occupy themselves on the question of reservoirs, as regards the question of water supply?—The Committee need certainly not discuss that question as to reservoirs being necessary to subsidise any supposed failure in the Thames; that, I certainly say, you need not entertain for a moment.

3150. You have explained to us in a general way how you dispose of the sewage, and you stated that you consider the spreading of sewage over the land the only means of purifying it; has your attention been drawn to the great difference in the expenses incurred in laying the water upon grass lands, or upon other lands, varying from 15 *l.* per acre down to 10 *s.* per acre; are you of opinion that cheap modes of irrigation may be applied to the disposition of sewage?—I have examined schemes of irrigation in which the cost has varied from 150 *l.* per acre to a few pounds per acre.

3151. Could you not even say a few shillings; instances have been mentioned of a few shillings?—I can easily conceive it, but my opinion is this, that as far as I have seen all the expensive methods have wasted a great deal of money; just recollect the method that was pursued when the sewage question was first taken up; there was the laying down of a system of underground pipes, putting hydrants into the centre of fields, and distributing the sewage by hose and jets, and manipulating it through the hands of workmen.

3152. All that you think quite unnecessary?—It is merely money thrown away; it has thrown the question back.

3153. Have you not observed that in ordinary water meadows a great expense goes on in moving about the land and shifting the surface of meadows?—Yes.

3154. Are you aware that there are systems which now entirely dispense with that expense, taking the land almost unmoved, and applying sewage in small quantities over the whole surface?—A system of contour carriers should be made over the land, which could be made to perform any sort of service which might be imagined; you may take a mountain top, which may undulate in any way you like; I can conceive a mode, the cheapest possible mode, by mere surface grips, by which you shall be able to contour that hill, and irrigate it from its summit to its base, at the cost of a few shillings per acre.

3155. Are you aware that that system is equally applicable, with certain modifications, to very sloping lands and very flat lands?—It is; it is a method that I would urge upon all men having sewage irrigation works to lay out, closely to study before they spend their money in expensive works.

3156. Mr. *Neate.*] If the lock at Sandford is removed, and the lasher lowered, and the high level of water at Sandford is also lowered, that would materially add to the water power of the mills above Iffley?—It would.

3157. And would add considerably to the value of those mills?—It would necessarily add to their value.

3158. As a general question, if you lower the tail weir of the mill, you may lower in an equal degree its head weir?—Its head may be made to follow its tail.

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3159. Without hurting the mill?—As regards its chemical power and money value.

Mr. *Toulmin Smith* referred to Question 1574 in Mr. Leach's evidence:—"Then you have based your estimate on what the New River Company take; that is a very excellent guide. I find that in the year 1865, they took 7,051,000,000 gallons, and the rate they paid for it was about 10 *s.* 2 *d.* per 1,000,000, and that was a rate settled 14 years ago;" and contended that Mr. Leach had made a mistake in that answer, because it appeared from page 37 of the Commissioners' Report, that the New River Company pay to the River Lea Trustees 1,500 *l.* per annum for the water, and that the yearly quantity taken was 7,051,000,000, which worked out at a rate of 4 *s.* 3 *d.* per 1,000,000 gallons instead of 10 *s.*

Stephen William Leach, Esq., re-called.

S. W. Leach, Esq.

3160. *Chairman.*] HAVE you heard the statement just made by Mr. Toulmin Smith?—I have.

3161. What have you to say with reference to it?—I think it will be found that my statement is perfectly correct; the New River Company pay 1,500 *l.* a-year, but they also contribute 42,000 *l.* for works on the River Lea; now, I take that 42,000 *l.* at 5 per cent., which represents the annual sum of 2,100 *l.*, which makes 3,600 *l.*; you will find, as I have stated, that 7,051,000,000 gallons is at the rate of 10 *s.* per 1,000,000 gallons.

3162. Mr. *Phinn.*] And the evidence you have given is perfectly correct?—It is.

Professor *John Thomas Way*, called in; and Examined by Mr. *Phinn.*

Professor *J. T. Way.*

3163. YOU were one of the Commissioners associated with Mr. Harrison and Mr. Rawlinson, I think?—Yes.

3164. With reference to water supply and sewage, I believe you concur with them entirely?—Yes, I do.

3165. I do not want to pursue that subject further at present; but may I ask you as a chemist whether there are not certain chemical elements in water which cannot be separated by any process at present known?—In the Thames, water as affected by sewage, do you mean?

3166. Yes?—I think so.

3167. I mean that mere filtering will not alter the chemical constitution of the water?—It alters it to a certain extent only; there is a chemical alteration by the act of filtering.

3168. As well as a mechanical one?—As well as a mechanical one; it is an oxidisation, or a sort of burning; it seems odd to explain it in that way, but it is a burning or oxidisation of the organic matter in water by filtration.

3169. Does that change the chemical quality and analysis of the water, so as to render unwholesome water wholesome to drink?—Only to a certain extent.

3170. It is a question of degree?—It is a positive fact that water which is filtered, for instance, through the sand filters of the water companies, diminishes to a certain extent only the organic matter by that process.

3171. Do you believe that in the Thames water, as consumed by the customers of the water companies, there are destructive elements after its purification by filtration?—I believe that purification by filtration does not sufficiently purify water if it has been impure before.

3172. I want to call your attention to other sources of pollution, for instance, the refuse from paper-mills; you have gone at some length in page 20 of your Report into the subject, showing the refuse which arises from paper-mills?—Yes.

3173. "The product from the dusting process, the lime refuse from the treatment of the soda to make it caustic, the alkaline waste liquor, and the insoluble part of the bleaching powder;" now, in the first place, are those various matters which are poured into the river from the process of making paper likely to affect chemically the constitution of the water?—Undoubtedly they are chemical substances themselves, and they are injurious, and not such as should be put into water.

3174. If this refuse from the paper-mills is poured into the water 20 miles above,

above, would that effect the water supply 20 miles below?—*Pro tanto* it would; there are no means of its being removed.

3175. I suppose it is obvious that that must affect it, though the extent cannot be precisely and accurately gauged?—Exactly so; it is a fact that when injurious matters are put into the water there are no arrangements by which they can be completely taken out again.

3176. Have you satisfied yourself that, even with reference to the interests of the paper-makers, that is an uneconomical way, to say the least of it, of conducting their manufacture?—There are matters which they throw away which are valuable, and might be very well saved.

3177. Do you refer to the lime refuse?—In many cases they do use that; they put it on the land.

3178. Alkaline waste liquor?—That would be their great difficulty; they now boil the materials of paper in the alkali, and, after having so boiled them, that dissolves a large quantity of organic matter; in the case of rags a great quantity of grease and organic matter of different kinds is dissolved.

3179. And again, this new material, which you may see piled in stacks at Cardiff, Esparto grass, which is imported from Spain, to be used instead of ballast?—It is hardly imported instead of ballast; it requires to be brought with ballast; it is very light.

3180. It fills up the vessel?—It is brought from the coasts of the Mediterranean.

3181. By vessels that go back with coals very often?—Yes; it is brought with sulphur ore.

3182. Does the disintegration of that, and the use of it for paper, produce a matter which is noxious when poured into the river?—A ton of Esparto grass makes about half a ton of pulp; the other half ton is necessarily dissolved in the alkali, or principally; and the alkali, I should undoubtedly say, is injurious to the water.

3183. I believe you took the evidence of Mr. Harcourt, the owner of Nuneham Park, before you; I will refer to page 8 of the Evidence, Question 153, "Is there anything you wish to add?" the Chairman says; to which Mr. Harcourt replies, "I wish to mention one point, namely, the injurious nature of the ingredients which at Sandford Mill are now turned twice a week into the water; we live several miles below it; the water comes down even as far as us, which is perhaps four miles, in a regular state of froth; the whole river is covered with froth, and the fish are killed. Is that a paper-mill?—Yes; our keeper finds fish, pike of one or two pounds weight, lying turned over dead." Then you ask, "To whom does Sandford Mill belong?" To which Mr. Harcourt replies, "Mr. Norris." Do you think that that is an overcharged description?—No, I do not think so, but I should say that in another place it is mentioned that this mill was in new hands, and was not being managed very well; it is only fair to say that.

3184. But still that shows the possibility under present circumstances of the river being polluted?—There is no doubt that paper refuse does pollute the river.

3185. I believe you examined Mr. Routledge, did you not?—Yes, he was examined before us.

3186. He was a paper manufacturer;—Yes, he is the importer of this Esparto grass.

3187. Mr. Routledge, I believe, and other paper-makers gave you evidence that the paper-maker himself has great interest in the purity of the water, has he not?—In the purity of the water that comes to him.

3188. Of course he does not care what is done with the water below him, but a paper-maker higher up the stream than another paper-maker might so pollute the stream as to prevent the lower paper-maker using it for his process?—That is quite so; in many cases they do not use the stream for washing their paper; they use wells, simply because the water is becoming too bad for them to use.

3189. Do you agree with what Mr. Routledge said, that one of the mills where they were making the best white paper they were reduced to making common brown paper?—That was so stated, but not by Mr. Routledge.

3190. Sir *G. Bowyer.*] Is it so, in point of fact?—That the water is deteriorated for paper-making.

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3191. Yes?—Oh yes.

3192. Mr. *Phinn.*] It does not matter whether it was Mr. Routledge or anybody else, who stated that, if it is the fact. In point of fact, it is the interest of the paper-makers not only as between them and the public, but *inter se* that regulations should be introduced for preventing the pollution of the river?—Undoubtedly.

3193. I suppose a great quantity of fœcal matter or sewage, poured into the river above a paper-mill, would be destructive of the mill?—Yes; in fact to make white paper you require very pure water; the paper pulp has a disposition itself to lay hold of filth of any kind, and consequently you get the paper blotched and injured if the water is not clean.

3194. Now we will pass from the paper-makers, and take the tanners; I believe the tanners pour into the water a great deal of polluting matter, do they not?—Yes, they do.

3195. Taking the hair off the hides, and in some of the subsequent processes?—Yes, they steep the hides in lime, and then they wash the hair that they get off in the river, which is very objectionable.

3196. Are there any other sinners in that respect besides the paper-makers and tanners?—The Thames proper, that is to say, the Thames as apart from its tributaries, is very free from factories; there are not many of them.

3197. On the tributaries within three miles?—No, I do not think on tributaries within three miles; but in different directions there are a good many manufacturers, such as brickmakers and drain-pipe makers, but it is not a manufacturing district.

3198. Have you found that gas refuse is at all turned into the river?—No, not at this time; they used to throw it into the river, but the greater part of the gas refuse is now a valuable material, and I believe they are precluded by Act of Parliament from throwing it in.

3199. We know that sometimes people are precluded by Act of Parliament from doing certain things, but unless watched, they contrive to do it notwithstanding?—I saw tar passing this window on Wednesday.

3200. You concur, of course, in the conclusions of the Report to which you subscribe your name; do you concur generally with the evidence which has been given by Mr. Rawlinson?—Yes, I do; of course there may be individual points on which I may differ from him.

Cross-examined by Mr. *Macnamara.*

3201. I believe that often deleterious matter is poured into the sewers which is destructive to vegetation; is that so?—It is quite possible that such matter might be passed into sewers, and it has, in one or two instances, been found to be the case; I believe in Edinburgh the gasworks were throwing their products into the sewer, until they were restrained by action.

3202. Are you of opinion, that a power like this, for instance, should provide against that contingency, that is, to prohibit injurious matter, destructive to vegetation, being poured into sewers by gasworks?—It is perfectly clear, that if sewage is to be applied to land, there must be some provision for keeping injurious matter out of the sewers.

3203. You think that, in fact, no good would be produced or profit made by sewage irrigation, unless you kept that deleterious matter out of the sewage?—That would be so; taking the fact that there is deleterious matter, I have not a doubt, in some factories, refuse matter arises which would be injurious to vegetation.

3204. And from gasworks?—Yes; as I said just now, the refuse from gasworks is too valuable to be thrown away as a rule.

3025. You are aware that there are no such clauses in this Bill to prevent sewage being rendered destructive to vegetation; looking at your Report, I think you are of opinion that the Upper Districts should be fairly represented in any Board that is to govern them or control them; is that your view?—We say so.

3026. Is that your opinion now?—Undoubtedly; you will see the expression is used, "an adequate number of representatives."

3207. It is, "an adequate number of representatives of the local interests of the Upper Thames"?—Yes.

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3208. Do you consider, looking at the present constitution of the Conservancy Board, that three persons elected by the present Upper Navigation Commissioners would fairly and sufficiently represent all those Upper Districts?—If we had thought it part of our duty to express an opinion about that, it would, in all probability, have found its answer in that recommendation.

3209. Have you formed an opinion upon it yourself?—I have naturally formed an opinion about it, but I would rather not express one, because it is not my duty to do so.

Mr. *Phinn* handed in the following Paper to the Committee:

"THAMES NAVIGATION BILL.

"As solicitors to the several Metropolitan water companies taking water from the Thames, we are authorised to state that, in consideration of the benefits to be derived from the operations of the Act, and, more particularly, by restrictive clauses and amendments, to the satisfaction of the water companies, being inserted in the Bill to prevent all sewage, &c. flowing into the Thames, the water companies are prepared to pay the sum of one thousand pounds per annum each, irrespective of what they now pay. Our object in making this proposal is to save further expenditure to all parties; and if the arrangement is to be carried out, it should be prior to the meeting of the Committee to-morrow.

"*Few & Co.*,
Solicitors to the Chelsea Waterworks.
"*Bell, Steward, & Lloyd*,
Lambeth Waterworks.
"*Bailey, Shaw, Smith, & Bailey*,
West Middlesex Waterworks.
"*Hargrove, Fowler, & Blunt*,
Solicitors to Southwark and Vauxhall Water Company, and Grand Junction Waterworks Company.

"London, 14th June, 1866."

The Room was ordered to be cleared.

After some time, Counsel and parties were called in.

The *Chairman* stated that the Committee, having considered the proposal which had been handed in, agreed to the following resolution:—"The Committee, having considered the proposal of the contribution of 1,000 *l.* a-year by each of the water companies, in addition to their present payment, are prepared to accept it."

Mr. *Phinn* stated that one of the Members of the Committee having expressed a desire that Mr. Harrison might be called, although not originally intending to call him as a witness, he would do so for the purpose of affording the Committee an opportunity of asking any questions which they might desire, and, if necessary, he might be produced upon a future occasion, for the purpose of being cross-examined by Dr. Adams.

John Thornhill Harrison, Esq., called in; and Examined by Mr. *Phinn*.

J. T. Harrison, Esq.

3210. You are a Civil Engineer?—I am.

3211. You were one of the Commissioners appointed under Her Majesty's Commission to investigate the state of the Thames?—I was.

3212. You concurred with your brother Commissioners in the main conclusions of their Report, but differed from them, as is suggested by your additional recommendation in the 33rd page of the Report?—I did.

Examined by the *Committee*.

3213. Mr. *Acland.*] In addition to being an engineer you also have had considerable experience in farming?—I have.

3214. Do you farm now?—Yes.

3215. Do you farm within the district of the Thames?—No.

3216. You differ from the rest of the Commissioners on the point of the

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interest which the landowners and the householders on the River Thames have in the improvement of the Thames, and, consequently, you think they ought to have some voice in the control?—I do.

3217. Will you explain your grounds?—I agree with the Commissioners in thinking that the water companies ought to contribute, and, through the water companies, the inhabitants of London; because, by keeping the Thames in a proper condition, the water will be improved for their use; it will be improved in certain ways, in which I agree quite with Mr. Rawlinson, namely, by the reaches being kept at a proper depth, the weeds being prevented growing as they do now; with those and other details I quite agree. All the advantages, for the water companies would be supplied without any navigation at all, and there is no occasion to have any locks to produce that beneficial effect, nor is it necessary that the weirs, which are at present extremely inefficient, should be maintained and made sufficient for passing the flood water which now injures the adjoining lands; upon those accounts I think that the riparian proprietors, and the occupiers who live in the towns, as well as the people who live upon the banks of the river, are benefited quite independently of the question of water supply; and therefore I think it is a very proper thing that, if the river is to be kept in a proper condition as to purity, and if the navigation is to be restored by the erection of locks of an expensive character being necessary for that purpose, and if the weirs are to be lengthened and made sufficient for passing the flood water, and the channels of the river are to be deepened, which would effect the same object of preventing the flooding, I think that these are benefits that affect the towns and riparian proprietors quite independently of the water companies, and that, therefore, they should be called upon to become responsible in some manner or other for the payment of the money that is requisite for executing these works.

3218. Do you not think that the expense to which the towns would be put to get rid of their sewage to a great extent, should make them contribute to this scheme?—Not at all; I do not see that that affects the question.

3219. How do you propose to make them contribute?—By a rate, so far as is requisite.

3220. A rate on the value of house property?—Yes.

3221. How would you make the landowners contribute?—That is a question which would require a great deal of consideration; the land adjoining the Thames is benefited in two ways, to some extent in the same way as towns, by means of being able to get coal and different articles at a diminished rate, also manure and articles of agricultural produce; and they are also benefited by a diminution of the floodings; therefore, it includes two descriptions of land, the land within the flood mark is evidently benefited by an improvement of the river which will prevent floodings; that is distinct and marked; the parishes adjoining the river are benefited to some extent by the navigation being kept open and made efficient; those are two grounds on which they might very fairly be asked to contribute at different rates.

3222. Have you considered the limits within which the rates shall be raised?—The one limit is well defined by the flood-mark.

3223. Would you make a uniform rate over the whole district within the flood-mark?—That would be determined in the same manner as the question is decided at present under the Land Drainage Acts; the persons benefited are made to contribute in accordance with the benefit they derive from the work.

3224. Upon a sort of *ad valorem* principle?—Yes.

3225. Is that the principle adopted under the Drainage Act?—Yes.

3226. Have you considered whether, with reference to the Thames, you think that practicable?—Yes.

3227. Have you had any opportunity of ascertaining the feeling of the landowners upon the subject?—Yes; we had a great deal of evidence upon different parts of the Thames.

3228. Are they favourable or unfavourable to their views?—My opinion is, that the balance is decidedly favourable to their being rated. I could mention, if the Committee will allow me to do so, some cases; I will first take the cases which are most adverse; I believe Mr. Campbell, of Buscott Park, is one of the most adverse witnesses to the rating; at Question 6928, this question is asked of Mr. Campbell: "It has been stated in evidence that the river has been silting up of late years; is that your opinion?" to which he replies, "My notion is this, that

that there are 3,000,000 of inhabitants in London who are interested in the course of this stream; and as for saying that because that stream runs past my land, and my cattle drinks it, I am to pay for deepening this river to benefit the 3,000,000 of people in London, I think that they may benefit themselves, and if this question comes before the House of Commons you may depend upon it that I will follow it up there." That is no answer, you will perceive, to the question. Then the next question, "But do you think that the river has been silting up of late years?" to which his answer is, "Yes, I think it has." Then the next question is, "Does anyone take any steps to remedy that state of things?" to which he answers, "No." Then he is asked, "If that silting goes on, is it not probable that it will increase the flooding of the adjoining lands?" To which he says, "Yes, I think the river wants attending to." Then he is asked, "By whom should it be attended to?" and his answer is, "I think that the 3,000,000 of persons in London are very much interested in the stream." Then the next question is, "Are not the persons who occupy the adjoining meadows, and who are likely to be more and more flooded by the silting up of the river also interested in it?" And his reply is, "My river land is all under water, but I cannot see what injury I sustain; I do not put any sheep on it; as for the summer floods, if you look into their history, I think you will find that it is a myth; I have been here for six years, and I have only known of one summer flood." That summer flood, I think, is described at 6797.

3229. In short, he does not think the benefit you can confer is worth paying for?—No; at Question 6797 there is this question, "Does it not sometimes happen that the meadows are flooded for weeks, and even for months together?—In the year 1860 the meadows were under water for 29 days in succession. What effect had that?—A very bad effect upon that crop, because it was in the month of June; the flood came out on the 2d of June, and it was not off until the night of the 30th." I think Mr. Campbell is one of the strongest opponents to the riparian proprietors being taxed.

3230. There are other opposing landowners?—There are only one or two who oppose; Mr. Harcourt, of Nuneham, admits the benefit of the navigation, and that the works should be done as a whole, but he prefers a voluntary system for payment of the works to be done.

3231. He does not agree to a rate?—He does not object to a rate, but he does not like it to be compulsory; he admits that the works ought to be done, and he is willing to pay for it; at Question 147 he is asked, "After you had made your embankments so as to enclose this land from the river, would it not be necessarily to the advantage of the landed proprietors on the banks to see that the river was kept in proper order?" to which he replies, "I cannot deny that it might be beneficial in the way of barges coming and carrying manure, and all that sort of thing; but whether the landowners would be willing to be taxed for keeping the river in order is quite a different thing; one way of surmounting these difficulties would be by a voluntary measure for rivers corresponding to the new Highway Act for roads; the residents in any district to adopt the Act or not as they like; if they do adopt it, the district to be put under a sort of local government." Then he is asked by the Chairman, "After you have once elected to put your district under the machinery, then the permissiveness ceases; then any outstanding person in the district cannot resist the rate levied by the Board which is established?" to which he replies, "No."

3232. Sir *G. Bowyer*.] Now let me ask you three questions; the first of them is this, If the river were put in good and proper order would not the injury done by flooding the adjoining land be considerably diminished?—Undoubtedly.

3233. Do you not consider that the flooding of the adjoining land arising from the river not being in its proper order, as it ought to be, is of the nature of a nuisance?—Yes, quite so.

3234. Then do you mean to say that the landowners ought to pay the Thames Commissioners, or the Thames Conservators, as the case may be, for not committing a nuisance, for it comes to that?—The river is in a certain condition at present——

3235. That is not the question; I meant to say it is the duty of the Thames Conservators, or whoever the body are who have the control of the river, to keep that river within bounds, so as not to do any injury to the adjoining landowners, and if they do allow injury to be done, it is a nuisance; I understand

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you to contend that the landowners are to pay for not having a nuisance committed upon their land?—It seems to be a disputed point.

3236. How disputed?—The Commissioners, as you will see by the Report of the Committee, of which Mr. Pusey was Chairman, visited the upper reach of the river, which was very subject to flooding, and they found that the flags were allowed to grow, and that there was an accumulation in the bed of the river and so forth, and they charged it in their report upon the adjoining landowners that they did not keep the river in proper order.

3237. That is another thing; let me put this case to you; supposing there is a private stream which belongs to one individual, and he who manages his private stream does not keep it in order, so that it floods the land of an adjoining landowner, would not that adjoining landowner have a right of action against the owner of the stream for not keeping the stream in order?—I should think so.

3238. In that case would there not be an action against him in the nature of an action for a nuisance?—Yes.

3239. Therefore do you not consider it is the duty of the Thames Commissioners, or Conservators, as the case may be, to prevent the Thames from committing that nuisance upon the landowners without charging the landowner anything for it?—But they must have some money to execute the necessary works with, that should prevent this nuisance; I quite agree with you that it should be the duty of the Conservators or the body, whoever they are, to so keep the channel up as to prevent flooding.

3240. Can they make the landowner pay for merely doing their duty?—They cannot do their duty if they have got no funds.

3241. Look, for instance, at the case of the water companies; do you not consider that the strong ground upon which the water companies are called upon to pay is to pay something for the maintenance of the river, assuming that the governing body of the river undertake to prevent a third party from committing a nuisance, say, to the injury of the water companies?—I say that they are to execute certain works which benefit the water companies; I do not think that one of the chief points is to prevent the towns from polluting the river by sewage, because I think the towns are bound to keep the sewage out of the river quite independently of the water companies.

3242. I am speaking of the Conservators; the Conservators undertake to keep the river in proper order, and to keep it unpolluted, and that is the chief ground on which we have decided that the water companies are to pay something towards the maintenance of the river; but in this case you say that the landowners are to pay money to the governing body of the river, not for any benefit which they derive from the works of that body, but for their not doing an injury?—I deny that; I contend that the works upon the river at present are in a very inefficient state, and that they require renovation; that they are the cause at present of the flooding of the adjoining lands, and that we require money to put the river in such a state that the adjoining lands shall not be flooded.

3243. Colonel *Gilpin.*] But it is not the flooding of the adjoining lands by reason of which it has got into that state?—I do not agree with you; I think that the adjoining proprietors are largely represented on the Thames Commission, and if they had done their duty as Thames Conservators, they should have seen that the river was kept in proper order; I may state that the neighbourhood of Oxford is flooded to a very great extent, and the town of Oxford is injured, not only by the flooding, but as regards the health of the inhabitants.

3244. Then you say that the town and the proprietors are to pay money, in fact, for not injuring them, or for not committing a nuisance?—They do injure them now.

3245. *Chairman.*] I suppose if those heads of water were not duly kept up, and those long deep reaches maintained, that the value of residential property on the Thames would be very much lessened?—Yes; we had evidence to show that below Teddington Lock the river is very shallow; indeed, it could be forded by boys going into it up to their knees; I have no doubt that the Thames throughout its whole length would assume very much the same character, and that it would be a mere driblet or stream of 18 inches to three feet in depth, which would certainly very much injure the beauty of it, and the value of the land adjoining as residential property.

3246. It would injure the value to the riparian owners?—Yes, it would form what are called hills in the bed of the river, and it would cause the river to be flooded if nothing was done to it.

3247. Sir *G. Bowyer.*] How do you propose to assess the value of the beauty of the landscape?—I do not propose to assess that at all.

3248. Mr. *Acland.*] I was asking you to give us the opinion of the landowners; since I asked you those questions you have been asked several questions, which, as I understood them, have proceeded upon the basis of asking you to admit, and I am going to ask you whether you do admit it or not, that the only ground for charging the landowners is that they are to pay for not having a nuisance created; do you admit that that is a sound way of putting the question?—I do not think it is.

3249. Is this your view, not that the landowners are to be called upon to pay for the Thames Conservators not creating a nuisance, but that they are to pay a contribution to the effecting of an agricultural improvement?—Towards removing a nuisance which does exist.

3250. Sir *G. Bowyer.*] That is just what I mean; then you do admit that you call upon the landowners to pay for a nuisance not being committed?—No; allow me to look at it in this way, supposing that the present Conservators were to remove the nuisance which at present exists, and then to do no more, the river would very soon again fill up, and the nuisance would recur; it is not a mere question of removing the present obstructions, but it is a question of continually removing them year by year, and therefore you have a benefit.

3251. Colonel *Gilpin.*] It is the duty of the Commissioners to do that as far as can be upon such a basis as will not injure private property?—Yes. The river will overflow its banks if left to itself, and therefore the works upon the river appear to be for the benefit of all if they are kept in such a state as to prevent the floods. The object of the Conservators would be to keep the river in such a condition that it should not flood the lands.

3252. Mr. *Acland.*] Will you proceed with the opinions of the landowners?—Dr. Adams, who is one of the witnesses (at pages 11 and 13), objects to pay for the navigation if the tolls go to other parties, but he only refers to the river above Oxford,

3253. Is it your opinion that, upon the whole, the landowners are favourable to carrying on the works to which they may be called upon to contribute, or are they on the whole unfavourable?—I think they are favourable as a whole. I think the bulk of the evidence is that they are favourable. I have given you those that are unfavourable in the first instance, but I can give you the names of those who are favourable.

3254. Did you take the opinion of any considerable land agent?—Yes.

3255. Can you give us their names?—Yes; we took the opinion of Mr. Bryan Wood, which you will see at page 227, No. 7015.

3256. *Chairman.*] Every town on the river has an interest in preventing pollution above them?—Undoubtedly.

3257. And therefore they have an interest in the water?—Yes.

3258. Sir *G. Bowyer.*] Ought not every town to be at the expense of preventing their own pollution of the river?—Yes, quite so.

3259. Mr. *Acland.*] Is it not in the power of the landowners below the flood-mark to place a very considerable obstruction in the way of the flow of the water by fences; has your attention been directed to that point?—It has.

3260. Are you of opinion that there ought to be any control over the placing of obstructions of that kind?—From the evidence we received and from inspection of the land, I have not the slightest doubt of the necessity of giving power to the Conservators who have the control over the river, the power of drainage, and they should be able to carry out the works for the prevention of the flooding of the adjoining land, such as are carried out under the Drainage Act.

3261. Do you think it important that the Conservators should have the control of the direction which catch-water drains or lateral drains would take, and the points at which the outfall should enter into the river?—I think it would be very desirable.

3262. Do you think that it would prevent opposition among the landowners?

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I think it would be so greatly to their interest that they would offer no objection.

3263. Which do you think would be the best course—to leave the landowners to the ordinary provisions of the Land Drainage Act, having parallel powers in the Thames Conservators, or would you give the Thames Conservancy a control over the local arrangements of the landowners?—I believe there is a length of about six miles of embankment about to be carried out under the Land Drainage Act; the evidence that we had was distinctly to this effect, that any system of the kind should be carried out as a whole, and that any partial embankment, beneficial as it might be for the land that was enclosed, would not be carried out without more or less injury to the lands that were left unenclosed.

3264. Do you think the evils of which we have heard so much here about Oxford could be remedied if the Conservancy Board had only the control of the main channel, without having any control of the side or lateral channels too?—Certainly not.

3265. Mr. *Peel.*] The last witness stated that it would be advisable for the new Conservancy Board to be freed from any responsibility of undertaking any agricultural works for the adjoining lands; do you ground the obligation of the landowner to be taxed simply upon the fact that the river is to be free from pollution, and is to be prevented from being flooded?—Yes; any question of drainage inland, as I understand you, would be an extra question.

3266. Sir *G. Bowyer.*] You are aware that the landowners are to keep up their banks?—I am not aware of that; the evidence we had before us did not go to that.

Monday, 18*th June* 1866.

MEMBERS PRESENT:

Mr. Acland.	Mr. Neate.
Sir Michael Hicks Beach.	Mr. A. W. Peel.
Sir George Bowyer.	Colonel Napier Sturt.
Lord Eustace Cecil.	Captain Vivian.
Mr. Milner Gibson.	Mr. Yorke.
Colonel Gilpin.	

THE RIGHT HON. THOMAS MILNER GIBSON, IN THE CHAIR.

ON the meeting of the Committee, Mr. Harrison, with the leave of the Committee, handed in the following Paper as an addition to his evidence:— 18 June 1866.

"RIVERS COMMISSION.—FIRST REPORT, RIVER THAMES.

EVIDENCE of Witnesses who object to the Towns and Riparian Proprietors being Taxed:—

E. Harcourt, Esq., 138 to 142; 147 to 150.
Dr. Adams, 200; 253–4.
R. Campbell, Esq., 6925 to 6933; 6940–1.
D. Bennett, Esq., 7396 to 7398.
T. Graham, Esq., 8619 to 8624.

EVIDENCE of Witnesses who express their opinion that there would be great opposition to Taxing the Towns and Riparian Proprietors:—

Charles Neate, Esq., M.P., 495; 2075.
G. P. Hester, Esq., 1479.
Mr. E. Blackwell, 2842.
Mr. C. Stevens, 2951 to 2952.
Mr. T. Pring, 3261–2.
Mr. H. Datvill, 3882 to 3885.
Mr. C. H. Witherington, 4281–2.
Colonel B. W. Knox, M.P., 7689.
T. Graham, Esq., 8623.

EVIDENCE of Witnesses who approve of Taxing the Towns and Riparian Proprietors:—

Charles Neate, Esq., M.P., 493; 528 to 529*a*; 2075.
Alderman Ward, 1375 to 1381.
J. K. Hedges, Esq., 1712–3.
Captain F. Dashwood, 1779.
Mr. William Exall, 3007 to 3010.
Mr. H. Darvill, 3943 to 3947.
Mr. T. Chamberlain, 4104–5.
Mr. W. M. Wilkinson, 5227 to 5232.
Mr. F. Gould, 5935 to 5937.
E. H. Donnithorne, Esq., 6100 to 6102.
William Chapman, Esq., 6045 to 6053.
W. Chillingworth, Esq., 6451 to 6456.
H. G. Bohn, Esq., 6588 to 6589.
Ditto - altogether 6585 to 6592, somewhat doubtful.
F. H. N. Glossop, Esq., 6603 to 6605.
Mr. W. B. Wood, 7015 to 7021.

16 June 1866. Evidence of Witnesses who approve of Taxing the Towns and Riparian Proprietors—*continued.*

Mr. G. T. Williams, 7050 to 7051.
Rev. A. Neate, 7320 to 7321.
G. H. Vansittart, Esq., 7676 to 7677; 7695.
Colonel B. W. Knox, M.P., 7687 to 7688.
T. Graham, Esq., 8622 (towns benefited).
Mr. F. King, 8835-6.

Evidence of Witnesses who propose other modes of raising the Money required for the restoration of the Thames Navigation, as by County Rates, a Grant from Government, &c.:—

Charles Neate, Esq., M.P., 493; 528–9*a*; 2083; 2100-1.
William Blandy, Esq., 3110*b*.
Alderman Ward, 1370–3.
G. Hester, Esq., 1470 to 1479.
J. T. Nelson, Esq., 5320–1; 5371-7; 5380–5."

Mr. *Macnamara* addressed the Committee on behalf of the Corporations of Oxford, Reading, and Abingdon, against the Preamble.

Mr. *Thomas Rogers,* called; Examined by Mr. *Macnamara.*

Mr. *T. Rogers.*

3267. I believe you are clerk to the Local Board of Health for the Borough of Reading?—Yes.

3268. The population of Reading, I believe, is 30,000?—About 30,000.

3269. And the Local Board consists of the mayor, aldermen, and burgesses of the borough?—Yes, the town council of the borough.

3270. Under the "Public Health Act" all sewers and drainage works are, I believe, vested in the Local Board of Health?—Except private sewers.

3271. Do you remember in the year 1847 an inquiry taking place with regard to the drainage and sewage of Reading?—Yes.

3272. I believe two Commissioners were appointed under the Act then in force, for making preliminary inquiries, and the Report, which you have in your hand, was made thereupon?—Yes.

3273. About how much did Reading expend in its inquiries with reference to the improvement of Reading at that time?—I should say a very large sum was spent over that inquiry; it arose in this way, and, perhaps, I had better explain it; this inquiry was very much urged on by the General Board of Health, of which Mr. Edwin Chadwick at that time was the chairman, or the most active member; I should say that very nearly the same grounds which have been offered by Mr. Rawlinson as a reason why we should be prevented taking our sewage into the Thames were put forth by Mr. Chadwick and other witnesses at that time in favour of that very scheme; it was decided in Reading that the scheme was so serious, and would entail so much expense, that the town subscribed towards retaining counsel; we spent 21 days in investigating the whole of the facts, and the evidence that was brought before us; amongst the rest all the evidence we have heard about Edinburgh was brought forward, and the result was the Report of which you have stated the substance, namely, that the whole thing was too speculative to impose upon a town, and that although it might be a good thing in itself, that it was not right to impose it upon any town to be carried out at the expense of the ratepayers; I have the evidence here, and the whole of the Edinburgh case, which has been referred to in this Committee, was gone into upon that occasion.

3274. Since that period, have the local Board of Reading done what they could to prevent sending sewage into the rivers of Reading, the Kennet and the Thames?—I may as well explain to the Committee something which the Committee have had no information upon, either by witnesses before them or by the Report of the Rivers' Commission; it is not correct that the sewage of Reading is drained into the Thames; we have in Reading a system of cesspools, and the sewerage goes into the cesspools; all that gets into the river through any sewer under

under the authority of the local Board is the water which overflows from those cesspools.

3275. Sir *G. Bowyer.*] Have you no sewer into the Thames?—No sewer for the sewerage of the town.

3276. Have you any sewer at all?—We have only sewers constructed for taking off the surface water only.

3277. Do I understand you to say that you have no sewer at all which does pour the sewage into the river?—No, I would not say that?—I mean that our system of sewage is a surface one, of which the cesspool system is a necessary part.

3278. That is not an answer to my question, which is this: have you got any sewers in Reading which carry the sewerage into the river?—The term "sewerage" is not defined; I do not know what you may call sewerage; do you mean the whole contents of the water-closet?

3279. Yes?—No, we have not laid down such a sewer.

3280. Mr. *Peel.*] Do private sewers drain into the Thames?—I am not aware of any large sewers; there are private sewers, which have been made by private owners, who are not under our jurisdiction, that use the Thames.

3281. Sir *G. Bowyer.*] Whether it is a large sewer or a small one is a matter of opinion; are you aware of any sewer at all which carries soil into the river?—I have no doubt there are sewers which do that.

3282. How many do you think?—Very few; they are private sewers; our system of sewerage is a drainage one, to take off the overflow water.

3283. Mr. *Macnamara.*] You have no doubt, as a matter of fact, that there are some private sewers which go into the Thames?—Yes, there are some private ones which do.

3284. Colonel *Gilpin.*] You have stated now that the plan recommended by the General Board of Health was too speculative and too expensive?—Yes.

3285. That plan was to induce the town of Reading to take away the sewage and distribute it over land, was it not?—Yes.

3286. Are you aware that since that time the sewerage of large towns is so distributed with great advantage, not only to the towns but to individuals; have you seen the plan in operation at Croyden?—We have made inquiries about it; we are not at all indifferent to that matter; what we say is this, that it has been carried on to a very limited extent only within the last two or three years, and in some of the towns four or five years; we say that the experiment has not been sufficiently tested, and that without a very strong case indeed we ought not to be called upon to close up our drains; that is what we feel. We were told precisely the same thing in 1847 by men as eminent as Mr. Rawlinson, both by Mr. Chadwick and the great engineers of that day. The scheme then propounded was a good and a safe one; that very scheme coincided with the present one in many of its details; we should be obliged to do something within three or four years from this time, and we are as anxious as Government can be to render our aid towards the purification of the Thames, but we object to being pounced down upon in this sudden way by an incomplete measure which will not effect that object.

3287. Do I understand you to say that you yourself have personally inspected the Croydon works lately?—Members of our Board have; we have been there.

3288. The borough town of the county which I have the honour to represent, is at this present moment engaged in a system of drainage of this description; a deputation went down to Croydon to examine the state of things there, and it was publicly reported on Saturday last that the principal tenant who is benefitted by this sewage gives 5 *l.* per acre for his land, and is perfectly well satisfied with his bargain, and that his crops are enormous; it was stated by those gentlemen who went down that no one would believe it who had not seen it?—I am quite aware of that, if you wish me to say whether I think land irrigation has been successful.

3289. That being so, there is no reason why you should let your refuse go into the Thames?—I do not adopt that conclusion at all, because what we say is this: you may get a good crop from irrigation, yea or nay; but I think you will find that, unfortunately, this system of irrigation of land is very much dependent upon the production of rye grass; it is not suited to general cultivation.

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3290. Sir *G. Bowyer.*] If you do not, in point of fact, send your sewage into the Thames, why do you object to this Bill?—I object to the Bill because of its comprehensive character, and because it will do what will be of no advantage to any one, except cause a great annoyance to us in Reading; if you look at the enactment it says that you shall not allow to flow into the river any sewage (the meaning of that is not defined), or any offensive or injurious matter; it does not even say injurious to what.

3291. I understand you to say that you do not, in point of fact, send your sewage into the river now?—Not if you define it; but we do throw a great quantity of water, which Mr. Rawlinson would say was injurious matter.

3292. Colonel *Gilpin.*] You were about giving your opinion as to whether the system which I have just mentioned was beneficial or not?—I have no doubt that the sewage matter has very fertilising qualities; every gentleman knows that who has any land; I myself farm 500 acres of land.

3293. Do you not think it would be a benefit to the town of Reading?—I think it is a matter which requires the greatest consideration and deliberation.

3294. *Chairman.*] Do you deny what the Commissioners say, that the town of Reading adds largely to the pollution of the river?—Yes, I do; we complain of the injustice of this Bill very much, because whilst the avowed object of it is to purify the river, you do this and allow the Kennet ——

3295. You had better confine yourself to the points of the Bill which are before the Committee that you definitely object to?—We object to the entire of the sewage clauses most strongly; we object to them as unjust, and we believe it is a Bill which will not carry out its object.

3296. Do you claim a right to throw your sewage into the river?—No; we are precluded from throwing that into the river so as to be a nuisance.

3297. Sir *G. Bowyer.*] Then what do you complain of? If at present you are not allowed to send your sewage into the river, and if, in point of fact, you do not send it into the river, what is the complaint that you make against the Bill? As I understand you, you send something into the river which you say is not offensive?—I add to that, so as not to be a nuisance.

3298. We consider that any sewage must be a nuisance if thrown into the river?—I say there is no evidence of its being a nuisance.

3299. Any sewage must defile water?—I wish the Committee to understand our case about Reading thoroughly.

3300. Mr. *Macnamara.*] The present system of sewage at Reading, you say, so far as the Local Board of Health is concerned, is generally by means of cesspools?—Yes, generally, as far as the Board are concerned.

3301. Have the Local Board done what they can to prevent that; that is, have they done what they reasonably could do to prevent the sewage finding its way into the Thames?—Yes; we prohibit persons connecting drains from water-closets with our drains; only about a fortnight ago we summoned a man, under the powers of the Public Health Act, for connecting a drain privately with our sewer, so as to throw the refuse of his closet into the river, and he was fined 5 *l.* for doing it; we have that power.

3302. Now, let me ask you this: notwithstanding that Report of 1847, have the Local Board of Reading been turning their attention and acquiring information at a considerable expense, with the view of carrying out a system of sewage irrigation?—With a view to get rid of the cesspool system, and to adopt the best practical system of sewerage which by information we can get.

3303. They have been making various inquiries for that purpose?—Yes.

3304. Have they been going up to the present time?—Only within the last three weeks we have been visiting these different towns where the irrigation of the land has been going on, with the view of seeing what is going on, and also of testing the value of it.

3305. Let me ask you to state as shortly as you can to the Committee why the Local Board of Health, and therefore the corporate body of Reading, object to the sewage clauses in this Bill?—The first great objection we make to it would be this, that if this Bill comes into operation, until we have much larger powers than we have now, we shall be subjected to very great local evils, of which the extension of the cesspool system has been so long condemned, would be the principal one.

3306. How would that be brought about?—Because it would involve the making of fresh cesspools.

3307. You

3307. You mean by the prohibitory power of preventing the throwing of the sewage into the river?—That is the effect of the two clauses taken together—the 47th and 48th; the effect of those clauses would be to cause the further construction of cesspools.

3308. That is one of the great objections which you have to those clauses?—That would be a very great evil.

3309. Will you state further any other result which occurs to you why they consider these clauses objectionable?—In the next place, if the object be to purify the Thames, we say that as respects Reading, the River Kennet, which I ought to explain to the Committee comes through the town, and takes the sewage of a variety of towns above Reading, is infinitely more filthy than the Thames itself, and pollutes the Thames to an infinitely greater extent than anything that comes from Reading does.

3310. Sir *M. H. Beach.*] Do you know the population of the towns above Reading?—There are so many that I cannot give them all; I could give many of them; they are large towns; there is Newbury, which is a very large town; the population of Newbury and the adjoining place I suppose must be 10,000 or 15,000.

3311. Mr. *Macnamara.*] That is more than there would be on the Thames?—Yes.

3312. *Chairman.*] I did not quite understand where you drew your distinction between the two clauses; do you object to the prohibition against opening new sewers into the Thames?—Yes, I do, at present.

3313. There is another proposition which relates to the stopping of existing sewers?—Yes; seeing that the only matter which we do pour into the Thames is comparatively innocuous matter, that is, the overflow water, if that is prevented, and we are doing it every day, because there is at present an urgent necessity for it; we spent 500 *l.* last year in those kinds of sewers, and we were obliged to make some in a great hurry.

3314. You would not object to being prevented from opening new sewers, which really did convey this noxious matter?—No, because we do not intend to do so.

3315. Mr. *Macnamara.*] Would your powers under this Act interfere with them?—Materially; it would subject us to nuisances of the gravest kind, and really that is the greatest objection which we have to this matter.

3316. *Chairman.*] You are investigating it now?—Yes, that is the reason why our wish is to go thoroughly into it; last year, in consequence of the floods we had, I think about Christmas time, we were obliged to make sewers with very great speed indeed to save some of the best houses in the town from being inundated by an excess of water; this Bill would prevent even that.

3317. Sir *G. Bowyer.*] Is it water or is it sewage; the words of this clause do not prevent water being drained into the Thames?—If the Promoters require something different, then of course they can submit something in different language; but I have no doubt that, practically, we should be prevented opening sewers of any kind or description into the Thames.

3318. You mean a drain for water, because there is a great difference between a sewer and a drain?—It is evident that no water can be collected from the surface of a town which would not otherwise come as the definition of offensive matter.

3319. Mr. *Peel.*] Liquid matter, coming from the deposit of solid matter, would be offensive matter, and not mere surface water?—You will find that evidence has been given with regard to some of these towns which have been irrigated, that every water which has been taken from land is perfectly pure; you may get it perfectly pure; land is the best purifier.

3320. Lord *Eustace Cecil.*] What becomes of your sewage at the present moment?—It is deposited in cesspools and is removed; I am not speaking of private sewers; they have an overflow, so that the solid matter is deposited and carted away after the lapse of five or ten years or less, according to the nature of the soil in which the cesspool is made.

3321. Has that system been in existence for a long time?—For centuries; we wish to get rid of that evil, but this Bill would exaggerate it.

3322. Colonel *Gilpin.*] You wish to drain into the Thames, that is the real fact?—No, we do not want these prohibitory clauses brought upon us so immediately, until we can do something else.

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3323. Sir *G. Bowyer.*] They are not sudden, because the minimum is 12 months' notice?—We cannot do it under three years; we cannot get land to do it.

3324. You are not restricted to 12 months?—That is the minimum.

3325. Mr. *Macnamara.*] Will you state any other reason that occurs to you, why you object to these sewage clauses on behalf of the Local Board of Health?—I was naming one which we think is a very important one, which is, that whilst the object of the Bill is to purify the Thames, none of the tributaries of that river are at all affected in this Bill; we in Reading are particularly affected by the Kennet; I wish to draw the attention of the Committee to this fact, that we in Reading, take our water supply from the Kennet, and we are to be prevented pouring even our overflow water into the Thames, for the sake of London, and we are to be subjected to the continuance of the annoyance of taking our own water from the Kennet, which is polluted by the whole of the drainage of the various towns from Marlborough up to Reading.

3326. *Chairman.*] That gives you an opportunity of judging of the feelings of those who are below Reading?—Quite so.

3327. Sir *G. Bowyer.*] You say in fact, because of the Kennet being polluted, that you have a right to pollute the Thames?—No.

3328. Why do you not get an Act of Parliament for the Kennet?—The Thames is purer water than the Kennet, but it is harder, and is therefore unfit for domestic purposes; we say that you are straining at a gnat, and swallowing a camel, when you prevent us using the Thames for our pure water, and you do not prevent the people above Reading from using the Kennet for corrupt matter.

3329. Mr. *Macnamara.*] On that account you look upon it as an incomplete and unjust measure?—Yes; we feel that the sewage of the towns above us does corrupt the Kennet, and we suffer the annoyance of it at Reading.

3330. Sir *G. Bowyer.*] Because you suffer the annoyance of that yourselves you think you have a right to inflict the annoyance upon somebody else?—We have the analysis of the Kennet water and the Thames water; I may say I do not believe the sewage from Reading injures the health of the inhabitants of London; I am not one for continuing a system of drainage into the river, and I should be very glad to see it abolished; no evidence was taken by that Commission which shows any injury has ensued from sending this water into the Thames to any human being.

3331. Mr. *Macnamara.*] You have heard Mr. Rawlinson say that London is one of the healthiest cities in the world, notwithstanding it is subject to what it may receive from Reading?—Yes; London is healthier than Reading, having regard to its crowded population.

3332. Do I understand you to say also, that one of your objections would have assumed this form, that although Reading would be put to all the expense of constructing the sewage works under this Act, still they would not have pure water for themselves?—Yes, quite so.

3333. Because it only applies to places within three miles of the Thames?—Yes.

3334. Sir *G. Bowyer.*] Why have you not applied for a private Act to prevent the pollution of the Kennet?—Because it does not come within the views of these theoretical gentlemen as to the pollution of rivers.

3335. I thought you told me that the pollution of the Kennet was a great nuisance to Reading?—No, I said assuming that the pouring of sewage into a river pollutes and injures it, that the Kennet is more polluted and more injured than the Thames, and you are imposing upon us an obligation to rid the Thames of that which you compel us to keep in the Kennet.

3336. We do not compel you to keep it in the Kennet?—There is no provision for taking it away.

3337. Lord *Eustace Cecil.*] Do you not think that that is one of the reasons why Reading is not so healthy as London?—I think cesspools are a great evil, and I think our health would be very much improved if cesspools were abolished.

3338. You do not think it would be much improved if the water was cleaner?—The water has been subjected to analysis, and it has been found very good.

3339. Mr. *Macnamara.*] Is Reading, upon the whole, a healthy town or not?—It

—It is upon the whole healthy, but of course it has not got the health of an agricultural district.

3340. Are there any other reasons which you wish to offer to the Committee in connection with these sewage clauses?—Yes; another very great objection we have is this, that we have been empowered by Act of Parliament, and have at this moment a statutory right to do what we are doing, and upon the faith of that we have laid out a considerable amount of money, and the other towns upon the Thames have done the same thing; I will take the case of Windsor; within the last five or six years Windsor has carried out a complete system of drainage of sewerage, and that under the authority of the Public Health Act, upon money borrowed and charged upon the inhabitants of the town, upon plans approved of by the General Board of Health, of which Mr. Rawlinson is the present superintending inspector; it does seem to me a monstrous thing that towns which have laid out these immense sums of money should be pounced down upon all of a sudden, and told that they shall not use these things which they have been at this great expense for; I think such things ought not to take place, except there is the strongest evidence in their favour; we are quite willing to co-operate in a well-considered scheme.

3341. Colonel *Gilpin.*] That observation with regard to Windsor hardly applies to Reading?—Not so fully, because, wisely enough, we have held our hands. Croydon is one of those experimental towns which have always reverted to any new idea which the Board of Health has thrown out, and the consequence has been that they have spent two or three fortunes there; Croydon has been spending a very large sum of money, a great portion of which they have, in my opinion, wasted.

3342. But Croydon is successful now?—I think they are successful now; but I have been told in this room that a respectable householder near these irrigation works is going to leave his house in consequence of the nuisance arising from them; if that is true, it is a very serious thing to pollute a town in that manner, for they do nothing less.

3343. Sir *G. Bowyer.*] But, of course, you will carry your irrigation works to such a distance from the town as not to be a nuisance?—I do not know; the next objection I have to it is, that the effect of this Bill clearly is to drive us to adopt this irrigation land system; there is no alternative left to us; I see by the Oxford newspaper that the Oxford people have the advantage of having Sir George Bowyer as an owner of land at Bradley, which he is negotiating to sell to them.

3344. No, to lease?—That is a great advantage; I hope it will suit Sir George's purpose as well as the purpose of the town of Oxford; I do not hesitate to say that we at Reading are not so situated; I do not know anywhere in Reading where we are to get land, unless we have compulsory powers; I say that those compulsory powers ought to be granted before this prohibition is made, so as to give us a remedy, and then, although we have been put to serious expense, I do not know that we should struggle so much against it; we object to being put into the hands of landowners who will compel us to pay 500 *l.* per acre for what is not worth 100 *l.*

3345. What is the price of land about Reading?—Land in the neighbourhood of Reading is very valuable indeed.

3346. What would be about the price?—You cannot get land within a mile of Reading now under 300 *l.* an acre.

3347. Are there no landowners who would be willing to co-operate?—No, certainly not; it is a residential neighbourhood, you cannot get land there. There has been the Thames Purification Company, of which, I think, this Committee have not heard enough, and I think the Committee ought to know more about that Bill than they do. They have been obliged to give up their land which they proposed to take at Reading, because it interfered with residences, and in the same way they have been obliged to give up at Windsor. I do not believe we can get land any where suited for this purpose within four or five miles of Reading, and then you would have to be at such an enormous expense for the conduit pipes, and there must be more pumping, and the great expense occasioned by that would be a very serious matter. To get land to carry out these works would be a very serious thing. I do not hesitate to say, that if we were locked up as we should be by these enactments until we have got the power

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of carrying out these works, it is more than likely we should have a serious epidemic; such is the opinion of the medical men of the town.

3348. *Chairman.*] You say you do not throw your sewage into the Thames?—No, except it is done by stealth.

3349. If you do not throw your sewage into the Thames, what do you do with it?—It goes into cesspools, and the overflow passes through what are called surface drains.

3350. You are now shut up with the sewage, you would not be much more shut up if this Bill passed?—Yes, this Act would prevent the overflow from going into the river.

3351. Then you would have all that remain?—Yes; if you prevent the overflow you get the sewage water scattered all over the town in the basements of the houses.

3352. Sir. *G. Bowyer.*] You say that which you convey into the Thames is not offensive matter?—I believe, in point of fact, it may go into the river without doing injury to any one, but I also believe that under those clauses we should be prevented carrying it out, and when we came to the test there would be scientific men and theoretical men who would come forward and say it must be injurious to the Thames.

3353. Colonel *Gilpin.*] Is there not a great deal of the water-closet sewage carried into the Thames now by regular outlets from houses into the Thames?—Some of them are private houses which do not come within the Public Health Act; my opinion is that Parliament would do a much greater good by vesting in local boards the power of preventing that sort of thing, which we have no power to do at present; all we have power to do now is to drain the places, but we have no power to stop up these private drains.

3354. Mr. *Macnamara.*] The Thames does not run through Reading, but forms the northern boundary?—Yes.

3355. It is the Kennet which flows through Reading, is it not?—Yes.

3356. Have you any further observation to offer about the sewage clauses?—I have read through the Conservancy Act; I think that the case would be met very fairly, and should be met in the same way as it is at present, by inserting the same clauses in this Bill that there are in the Conservancy Acts, namely, that nothing in those Acts should affect the powers of the constituted authorities. There is a clause there reserving the rights of the Commissioners of Sewers, the Metropolitan Board of Works, and such like; you then get rid of the private and surreptitious nuisances which are created by people emptying matters into the river, but you would not interfere with these rights which have been given by Acts of Parliament vesting in the local authorities, if at the same time you insert such a provision as that which we propose, giving Boards the full power of carrying out an improved system of land irrigation, or otherwise you might purify the river and get rid of this sewage; if such a measure as that were to be proposed, we should not be indisposed to help in it.

3357. Sir *G. Bowyer.*] Does not the Public Health Act enable public Boards to acquire lands for these purposes?—No; only by agreement.

3358. The clause read by the learned counsel appears to give such a power?—There is considerable doubt whether that power really affects such a thing as this.

3359. Would you be satisfied if the same clause were inserted in this Bill?—No; the 75th clause is a clause which enables the Home Secretary, after a preliminary inquiry, to issue a provisional order, and that, when confirmed by Parliament, enables you to take land compulsorily; that is an operation which of itself takes something like six months; you must give notice, the same as you do by the Standing Orders of Parliament; then it is in the discretion of the Home Secretary to give it. There is another objection; this involves a very large outlay of money; our borrowing powers are limited, and if the expense is imposed upon us at Reading, I should feel strongly disposed, as a member of the local Board, to advise them not to lease land for a short period; I hear that Sir George Bowyer is about granting a lease of some land of his.

3360. For a long period?—For a period, I believe, of from 14 to 21 years.

3361. Longer than that?—People may become lessees of land, and go to the expense of constructing works and conducting their sewage off that land, which may be rendered useless by the landlord not renewing the lease; a lease is practically useless; you must become the purchasers of the land.

3362. If

3362. If that is the case the Local Goverment Act will enable you to do so? —Then would the Committee look at the effect of it. I have no doubt that no land in the neighbourhood of Reading can be got much under 200 *l.* per acre.

3363. Would that be the price for land four miles away from the town?—You may get land four miles from the town, and have to pump 160 or 170 yards high, but that would be very expensive; I have known land sold within two miles of Reading for 200 *l.* per acre; we might possibly get some land at the western end of Reading.

3364. Colonel *Gilpin.*] That is up hill?—The Thames bounds the northern end.

3365. Mr. *Acland.*] Are you prepared to say that for five or six miles down the Thames there is no land within 100 feet of the level of the Thames to be got for less than 200 *l.* per acre; following the stream of the Thames, are you prepared to say that there is no land the market value of which does not exceed 100 *l.* per acre?—I am quite prepared to say there is none within a mile of Reading; five miles will take you to Pangbourne; of course, I could not say as to every inch of ground, but I do not believe you would get anything like 200 acres at 100 *l.* an acre; there might be a small piece there of that value.

3366. Sir *G. Bowyer.*] Is not Reading a very wealthy and increasing place? —It is a very increasing place.

3367. The value of property is increasing there very much, is it not?—I do not know that; it is not a place like Croydon.

3368. But it is an improving place?—Yes, more in a commercial sense than in a residential sense, like Croydon.

3369. But still it is a large and wealthy town?—It is not a wealthy town compared with such a place as Croydon, which is made up of residences; there are a great number of houses which are of the class of labourers and artizans' houses.

3370. Mr. *Acland.*] Would it be more difficult to get land near Reading than Croydon?—In the first place, Croydon is a new town, its population has grown there.

3371. Are you prepared to say that land is less valuable in Croydon than it is at Reading?—Not in the immediate neighbourhood of the town.

3372. Mr. *Macnamara.*] Now about representation, I believe the Corporation of Reading are of opinion that the Upper Navigation Commissioners should be put an end to?—Yes, I think so, I think every one is of that opinion; they have not the funds to carry it out.

3373. What is the feeling of Reading and the corporate body, with regard to the representation of the Upper District?—I think there is an unanimous feeling throughout the whole district, as far as I have been able to ascertain it, that the Board having charge of the Thames, should represent the Upper Navigation as completely as the lower.

3374. Sir *G. Bowyer.*] Do you mean that they should have an equally enormous number of representatives?—That is the only way to represent it on equal terms; I think from what I have heard in this room, that there seems to be a repugnance on the part of the Conservancy Board, for any of the gentlemen to retire, I should have suggested that a portion of that Board should be got rid of, and a representative body of the Upper District incorporated with it; but as they do object to that, the only alternative is to increase the Board; I like small bodies rather than large ones myself, but not a small body which represents one interest only.

3375. Mr. *Acland.*] Is there not another alternative, that for the particular purpose of this Bill, a portion of that London body should be selected together with another body of persons perhaps not equal in number, but say six for the area of the Upper Navigation, and that they should be appointed in a definite relation to the Commissioners as a sort of committee under them; is not that possible?—Something of that kind might be possible, so that the power of proceeding to be given by this Bill be given to the Board, the constituent elements of which should be local as well as metropolitan.

3376. Mr. *Macnamara.*] In your opinion, or the opinion of those for whom you speak, connected with Reading, would three members elected by the Upper Navigation Commissioners, added to the present 18, be a sufficient representation of the Upper Districts?—That is no representation at all; you do not get one

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of them to come to the meeting to elect those three representatives; the effect of that would be that they would be elected by some few active people, who would come to the meeting for the purpose, and if any particular section of the community had an interest in getting those three men elected, there would be no difficulty in the world in getting a sufficient number of persons to come there.

3377. If the body should meet together, would it not be, in your judgment, an unwieldy and cumbersome body, and, on that account, not act effectively?—Yes; I think the machinery provided by this Bill of having a list of electors for each election is like the county registration; I mean the provision made in the Bill for getting together the Thames Commissioners.

3378. And even if the Upper Navigation Commissioners were the proper constituency, would that in your judgment be an unfair disproportion, it being three for the Upper District and 18 for the Lower?—Certainly.

3379. What is it, that you, as representing Reading, propose with regard to Reading upon the score of representation?—I cannot separate Reading from the Upper District; what we contend for is, that the Upper Navigation should be fully represented, and when we speak of Reading nominating one or two, that is as a part of the whole, I do not speak for Reading as apart from the Upper District.

3380. Sir *G. Bowyer.*] Could you tell the Committee in what respect you think the interest of the Lower Thames and the interests of the Upper Thames are not in accordance with each other, or in what respect they are antagonistic to each other?—I should not wish to put it in that way.

3381. But we wish to know your opinion upon it?—I imagine that the conduct of the navigation in and about London is a different thing from the management of the Upper Thames.

3382. That is not what I mean; it may be different. I want to know in what respect the interests of the Lower Thames can be out of harmony with the interests of the Upper Thames, and why the interests of the navigation of the whole river may not be considered as a whole?—I do not object to considering them as a whole, but I do not quite see the harmony; I do not say that they are out of harmony, or that there is anything antagonistic that I know of, but they are not the same or similar; I should say that the conduct of the Upper Navigation is very different from that of the lower part of the Thames.

3383. You anticipate that cases may arise in which the interests of the Upper Navigation are to be sacrificed to the interests of the Lower Navigation, or do you not think rather that the interests of both are identical?—The Board will have the power of making bye-laws for the regulation of the navigation on the Upper Thames; I do not think gentlemen residing in London are competent to manage the affairs of the Upper Thames; in fact, Mr Thorpe, the Deputy Chairman of the Conservancy Board, said he knew nothing about the Upper Navigation.

3384. Captain *Vivian.*] They have the control of the Upper Navigation now.

3385. Sir *G. Bowyer.*] They go up above Staines?—That is the Lower Navigation.

3386. I mean that portion where the tidal navigation ends; the part below Staines is homogeneous with the part above Staines?—I think there will be considerable traffic to and from the millowners, and the towns are interested in that.

3387. Those interests would, of course, be made known by the three members who are to represent the Upper Navigation; is it at all likely that the body managing the Lower Navigation would act unfairly, or do other than justice to the Upper Navigation?—The principle of the present day is local government and local representation.

3388. That is not an answer to my question?—I could not say that the Thames Conservancy Board, consisting, as it does, of 12 London gentlemen, has any interest antagonistic to the Upper Navigation; and I should be very sorry to say that any 12 gentlemen in London would wish to do any harm to the Upper Navigation.

3389. Lord *Eustace Cecil.*] Do you think questions arising with reference to the Upper Thames, would very often be a cause of quarrel between the Upper Commissioners and the Lower; that is to say, the Lower Commissioners might be in favour of shutting up the sewers all along the river, and the Upper Commissioners,

missioners, if they were properly represented as you say they should be, would be in favour of keeping the sewers open?—My feeling is that the point is this: I believe these Boards are, generally speaking, guided very much by the officers; and I believe that the skilled engineers who they are in the habit of trusting would come before them and give a very strong opinion about certain points, and that they would be decided with very little consideration indeed by the Upper Navigation; that is my observation.

3390. You have not yet given an answer to the question of Sir George Bowyer?—I do not see any conflicting interests in the whole matter; I cannot say that the interests of the Upper Navigation are conflicting with the interests of the Lower Navigation, but they are not the same; there used to be a considerable traffic in barges carried on between Reading and London, when the Thames was in a proper navigable state, before the railways were made.

3391. I have understood the whole of your evidence to lead to the point that surface drainage is a matter with respect to which the towns ought to be allowed to drain into the river?—I have no doubt that a Board consisting of only London people would be very likely to deal very unfairly with that question, not from a desire to act unfairly, but from not understanding the working of that, and seeing it in all its bearings; I think that such a Board would be very likely to act unfairly.

3392. Sir *M. H. Beach.*] Do you not think they might fill up the water for the purposes of navigation, and thus cause floods in the country above?—Certainly; they might do anything of that kind.

3393. Mr. *Macnamara.*] I believe the lands about Reading are very liable to be flooded, are they not?—Yes.

3394. And so they are about Oxford?—Yes.

3395. Of course the land on the banks of the Thames would be very materially affected by this Bill if it becomes law?—Certainly; very seriously affected.

3396. Looking at the way in which those interests may be dealt with, are you of opinion that they should have a more direct local representation than would be given by the three members elected by the Navigation Commissioners?—I think that is no representation at all; I think they ought to have full and free representation.

3397. Would the Thames Conservancy Board in London give that direct representation that a direct local interest is able to give for that direct local action which would be required?—I think not; I can see no objection to the different corporate bodies sending direct representatives; that is an easy mode of doing it.

3398. You think that the corporate bodies should be allowed to send a number of members for the Upper Districts?—I think that is the best way of providing for the Upper Districts.

3399. From what you know of those corporate bodies as representing the feelings of the inhabitants, do you think that they would be unduly obstructive to the other members of the Board in carrying out proper improvements?—No.

3400. Are they anxious, so far as you are aware, to co-operate with others in improving their towns?—I am sure we are at Reading, and I believe they are at Oxford.

3401. Sir *G. Bowyer.*] If you were a representative upon that Board, would you not, as a member of the Board, endeavour to carry out the views you have expressed to us to-day about sewage?—Certainly, I should not do anything there contrary to what I have stated to-day.

3402. Would you not therefore rather obstruct than otherwise, as far as stopping the pollution of the river is concerned?—I said quite the contrary; I have always been an earnest advocate for complete sanitary measures; I do not at all object to fair legislation for the purification of all rivers in England, but I do object to a Bill which seems to me to have been not considered at all, and which will not, if it is carried into law, effect the object it contemplates; it will leave us upon the Upper Navigation subjected to polluted rivers, and impose upon us the burden and expense of purifying the river for London, instead of compelling them to do that work for themselves; I think that the omission from this Bill of clauses compelling the purification of the river between Staines and the upper part is really a very serious blot on the Bill, and that it ought not to be passed if that cannot be altered.

3403. As I understand you to say, you do not, in point of fact, pollute the

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river now?—I do not believe that we pollute the river to any extent, which justifies an abrupt closing of our drains, or especially singles us out against the Lower Navigation; that is my conviction; I am not going to say that foul matter thrown into the water does not pollute it to a certain extent; but when you asked me the question whether I believe that sewage which is passed through such a bulk of water, at a distance of 60 or 70 miles, injures the Thames lower down, I answer in the negative.

3404. Do I understand you to claim the right to pollute the Thames to a certain extent; you claim your right of polluting?—I claim the right, according to the Act of Parliament, to pour our sewage into it, so that it shall not be a nuisance.

3405. Mr. *Phinn.*] I really think I ought to interfere here; there is no such right?—I beg your pardon.

3406. There is an express prohibition in the Act against your doing it?—What Act of Parliament?

3407. The Local Government Amendment Act?—It says, "So far as not to be a nuisance," if you will look at it.

3408. I will read the 4th section of the Local Government Act: "Local Boards may exercise the powers given by the 45th section of the Public Health Act 1848, also without their district, for the purpose of outfall or distribution of sewage, upon making due compensation, to be settled in the manner provided in the 144th section of the Public Health Act of 1848; provided always, that nothing herein contained, shall give or be construed to give power to any Local Board, to construct or use any outfall, drain, or sewer, for the purpose of conveying sewage or filthy water into any natural watercourse or stream, until such sewage or filthy or refuse water, be freed from all excrementitious or other foul or noxious matter, such as would affect or deteriorate the purity and quality of the water in such stream or watercourse;" it is absolutely a prohibition to pouring into the water any sewage until it is freed from all excrementitious or other foul or noxious matter?—Why do you not go further?

3409. I am not going to be cross-examined by you?—I think I am entitled to show, as you have quoted the Act of Parliament, that you are wrong in your quotation.

3410. Is that wrong which I have read?—Your interpretation is wrong as you have read it; this 4th section of the Local Government Amendment Act is an enactment enabling Local Boards of Health to go beyond their district for the purpose of getting an outfall for such district, and that proviso which you have just read is, a proviso that nevertheless they shall not throw that sewage from the outfall beyond their district, unless that process has been gone through; that applies to the outfall and distribution beyond the district where they have power to go under that section.

3411. It applies to both?—I beg your pardon; the 45th section of the Public Health Act is exactly as I state, that we may cause sewers to be emptied into such places as may be fit and necessary, but so as not to create a nuisance; that is the law, and the Act which you have read relates to going out of our district.

3412. Mr. *Macnamara.*] With regard to what you have called this overflow and surface water, have the corporation of Reading, and therefore the Local Board of Health of Reading, been desirous to take any steps, whether it may be water which is offensive or not, or in whatever degree to affect the river, have the Local Board of Health been desirous, and have they taken any steps to have that overflow water which may result from the drainage conveyed away from the river, is that what they have taken steps to do lately?—We have refused systematically to allow the public to carry the contents of closets into our sewer.

3413. Would the scheme which the Local Board of Health have been desirous to carry out, and have taken steps to carry out, take away the surface water as well as anything else connected with drainage?—You have suggested a question which is a very important one, and which has a bearing upon this Bill.

3414. Mr. *Phinn.*] Then please to answer it?—I will do so; there is a controversy among engineers, whether the whole sewage should go into one system of drainage, or whether the surface water should be kept separate, and I think in some towns they are united.

Mr. *Phinn.*] I must request that this gentleman will answer the questions that are put to him.

3415. Mr.

3415. Mr. *Macnamara.*] Have the Local Board of Health been desirous of carrying out, and have they been taking steps to carry out, a complete system of drainage that shall carry away everything from the river, even what is called the overflow water from drains?—I cannot answer as to carrying away everything, because I am going to draw a distinction; it is very possible that a complete system of drainage may be carried out, and yet the overflow and surface water be kept separate from the river.

3416. Sir *G. Bowyer.*] That is not an answer to the question. I understoo the learned counsel to ask you whether the authorities of Reading are doin something for that purpose?—As to doing certain things——

3417. Are they, or are they not?—They propose to do a certain thing, and that thing is to carry away all overflow from the river.

3418. They are doing that?—We are considering what would be the best scheme of drainage for Reading, that may involve two separate systems of drainage; it is an engineering question; it is possible that we should carry away the closet drainage in one sewer, and still have the surface drainage system.

3419. Lord *Eustace Cecil.*] You are not doing it now?—We are investigating the whole question.

3420. Sir *G. Bowyer.*] With a view of ceasing to send any sewage whatever into the river?—I cannot say that.

3421. Is it with that view?—I cannot say that, with reference to the drainage of the town proper.

3422. You intend to send the sewage into the river?—We intend to carry out the best system which our investigation will point to.

3423. Mr. *Macnamara.*] You have appointed competent engineers for that purpose?—We are making inquiries by two members of the Board; we have visited places for that purpose.

3424. Is it the desire of the Local Board of Reading to carry out the most complete system of drainage that they can?—No doubt; I should say that that system will be carried out which will do the least amount of injury to the river or the inhabitants.

3425. Your desire is to keep everything that is offensive out of the river?—There is no doubt of that.

Cross-examined by Mr. *Phinn.*

3426. Now, will you be good enough to answer my questions in a straightforward manner, and directly; do you contend for power to pour the sewerage into the river?—That is an existing power; we do not want anything further.

3427. You contend for the power of pouring into the river; you want that power now without adding to it; is that what I understand you to say?—I contend for the preservation of our present powers intact.

3428. You claim to pour a greater volume and quantity of sewage into the river than is poured now?—You may put it in any way you like.

3429. Will you answer the question?—I claim to keep our present power intact.

3430. You pour so much sewage into the water now; do you claim the right of pouring more into the river if it seems good to you?—You may take it so if you please.

3431. Will you answer the question; I am not arguing with you; I am asking you a question in cross-examination; you are a solicitor, I believe?—Yes.

3432. Then you ought to know how to answer a question?—Yes, I do.

3433. Do you claim the power of pouring a greater volume of sewage into the water than you do now?—If that power is given in the present Act we do; we claim to retain our powers intact.

3434. Do you claim the power of pouring a greater volume of sewage into the water than you do?—If that is a power existing, we claim to retain it.

3435. Sir *G. Bowyer.*] Do you, or do you not; answer yes or no?—That would be the effect of it.

3436. Mr. *Phinn.*] Then you do?—Yes.

3437. Are you not aware that the Court of Chancery have granted injunction after injunction against towns making that claim?—No.

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3438. You are not?—I do not believe they have.

3439. Your claim is under the 46th section of the Public Health Act; now let me read it, because as solicitor to the Local Board you should be accurate?—I am accurate.

3440. "Be it enacted, that the local Board of Health shall cause the sewers vested in them by this Act to be constructed, covered, and kept so as not to be a nuisance or injurious to health, and to be properly cleared, cleansed, and emptied; and, for the purpose of clearing, cleansing, and emptying the same, they may construct and place, either above or under ground, such reservoirs, sluices, engines, and other works as may be necessary, and may cause all or any of such sewers to communicate with, and be emptied into, such places as may be fit and necessary, or to cause the sewage and refuse therefrom to be collected for sale for any purpose whatsoever, but so as not to create a nuisance." Is that the clause to which you referred?—Quite so.

3441. Do you, then, say that emptying sewers into such places as may be fit and necessary involves the emptying of sewers into the Thames; do you think the Thames is a fit and necessary place for emptying your sewer into?—I did not say that; if it is not a fit and necessary place, we are prohibited by that clause from doing it; and we are also prohibited by that clause from doing it so as not to be a nuisance.

3442. Is the Thames a fit and necessary place for you to pour your sewage into?—I think it is a necessary place.

3443. Is it a fit place?—As we do it.

3444. Is it a fit place?—I think so, as it is.

3445. Then your view is, as solicitor to the Local Board of Health, that the Thames is a fit and necessary place for the pouring of sewage into?—I did not state that; I will not allow you to put words into my mouth which I do not use; allow me to say that the one principle which pervades the whole of that enactment is that whatever is done must be so done as not to be a nuisance.

3446. That is not an answer to my question?—That is the only answer which I will give to it; it must be so done as not to be a nuisance; we do not claim the right, neither have we power to drain into the Thames, so as to cause a nuisance to any one.

3447. There is not one word in this section about sewers not to cause a nuisance, except with reference to sale or the construction of sewers?—"And be it enacted, that the Local Board of Health shall cause the sewers vested in them by this Act to be constructed, covered, and kept so as not to be a nuisance and injurious to health."

3448. That is a sewer; that is not pouring out into the Thames?—"And to be properly cleared, cleansed, and emptied."

3449. Yes; go on?—"And for the purpose of clearing, cleansing, and emptying the same, they may construct and place, either above or under ground, such reservoirs, sluices, engines, and other works as may be necessary, and may cause all or any of such sewers to communicate with and be emptied into such places as may be fit and necessary, or to cause the sewage and refuse therefrom to be collected for sale for any purpose whatsoever, but so as not to create a nuisance."

3450. Then you may empty into any place that is fit and necessary?—Or you may distribute so as not to create a nuisance.

3451. You may sell it so as not to create a nuisance?—You will find the word "or" is disjunctive there and not correlative; "but so as not to create a nuisance" for those purposes.

3452. Sir *G. Bowyer.*] I do not read it so?—These Acts have been before the court, and the court prohibit it when it is a nuisance.

3453. Is not emptying any fæcal matter into the river of itself a nuisance?—No, certainly not; our surface drains are not.

3454. I say any sewage; I am not talking of surface drains; if by surface water you mean clean water, of course that is not sewage; but if it is sewage is it not a nuisance in itself?—If it is, we are precluded from doing it.

3455. Mr. *Peel.*] This overflow escapes into the river after resting on the solid matter in the cesspools?—Yes.

3456. Surely water that has rested on solid sewage matter is foul?—It gets such an admixture of water that it is no nuisance.

3457. Lord

3457. Lord *Eustace Cecil.*] Will you undertake to say that there is not excrementitious matter at all in the water that goes into the river?—No; that is my objection to the clause; I say, under the words, "offensive and injurious," that surface water may be included.

3458. Then you do not think that diluted excrementitious matter is offensive at all?—I do not think it would be from Reading.

3459. Surely you pollute the river down to Henley, and as far as Marlow, and that way the whole river is polluted?—But we are not all in the same boat.

3460. Mr. *Phinn.*] Now, let me ask you this question: did you attend the Commissioners, and give evidence before them, when they were sitting at Reading?—Yes, I did.

3461. Did the town clerk, Mr. Blandy, attend?—Yes.

3462. Did the Mayor, Mr. Blackwell, attend?—Yes.

3463. You tell us that you have been inquiring at Reading; I believe your inquiries have been going on for 20 years, have they not, ever since 1846?—The drainage question was opened in Reading in the year 1846; not inquiries by the Board of Health.

3464. But inquiries in Reading have been going on by the authorities, whoever they were, from 1846 up to the present time?—Yes, in order to get rid of the cesspool system.

3465. What have you done?—We have done a great deal.

3466. What have you done?—We have saved ourselves from making the expenditure which other towns have incurred; I think that is something to do; in London you have a centralising Board, who are always urging you to take up the newest notions of the day.

3467. Do you know a Mr. Charles Clarke who was examined; I find his evidence at page 114; he is a partner in a firm of lead merchants, is he not, at Reading?—Yes; I know him very well.

3468. I will read you his answer to Question 3273, and ask you if this is true of the Kennet close to Reading: "Do you find the Kennet polluted?—Yes, the Kennet proper. And increasingly so.—Yes, the Kennet from just above the town, through the town to where it enters the Thames, is in a deplorably filthy state, and I think that you should look at the question of the pollution of the Thames more as a national one than anything else, because the inhabitants of London and the whole of the Thames valley depend for their supply of water upon the Thames, and I believe the Thames is getting so bad that, under certain atmospheric influences, it is just possible that it may poison half London; I have seen as many as 15 or 20 dead dogs, cats, pigs, and sheep, besides filth from manufactories, from the hospital, from the gaol, and a great part of the drainage of Reading coming into this water supply for London"; is that a true picture drawn by Mr. Clarke, one of a firm of lead merchants in Reading?—Mr. Clarke is quite a character.

3469. I did not ask you about Mr. Clarke being a character; is that a true picture, or is it not?—I do not think it is true exactly.

3470. How far does it vary from the truth?—I should say it is rather an exaggeration; allow me to say that Mr. Clarke since that time, or about that time, himself applied to the Board of Health to drain three of his cesspools or water-closets, and to connect them with our drains; we refused, and he made a complaint to the General Board of Health because we would not allow him to do so; I mention that in order that you may judge of the value of his evidence.

3471. Captain *Vivian.*] You do not deny that his evidence is correct, because the worst you say of it is, that it is rather exaggerated?—Yes.

3472. Mr. *Phinn.*] Because he applied to connect one of his drains with your drains, is that the reason that that evidence is not true?—I did not suggest that it was not true; if you read the words, "The Kennet from just above the town," and so on, is the very thing that I have been putting to this Committee; that is what you do not propose to purify by this Bill; I say that the Kennet is in a filthy state, and it corrupts the Thames far more than we corrupt it: one great objection we have to this Bill is this, that we are compelled to purify the Thames for the benefit of London; but the Kennet, from which we take our water supply, is far more corrupt, and yet nothing is done with it.

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3473. Do we not take power to cleanse three miles in a straight line?—That does not meet the evil.

3474. Does the hospital drain into the Thames?—You are coming now——

3475. Just answer my question; does the hospital drain into the Thames?—I am not quite sure whether the hospital does drain into the Thames; I rather think it does; I think it does.

3476. How far from its confluence with the Thames does it drain into the Kennet?—I cannot tell you where the hospital does drain into the Thames.

3477. If it does drain into the Kennet, how far from its confluence with the Thames, does it drain?—I have heard that the hospital has a drain, but it is not within my knowledge.

3478. How far is the hospital drain from its confluence with the Thames?—It must be somewhere within the limits of Reading.

3479. Is it above the confluence with the Thames?—I do not know where it is.

3480. You do not know where the hospital at Reading is?—You did not ask me that question.

3481. Do you mean to tell me that you do not know where the hospital at Reading is?—I have not suggested such a thing.

3482. Is it within a mile of the confluence of the Thames?—The hospital is.

3483. Therefore if it drains into the Kennet it would drain within a mile of the confluence of the Thames?—I have no doubt it does; but I do not know where it does drain.

3484. Where does the gaol drain?—That I do not know; it is a private drain.

3485. We all know that the gaol is close to the railway station; it is that castellated building that we see from the line?—Yes.

3486. That is within a quarter of a mile of the Thames, is it not?—Yes, I should think so; that drain is not in our jurisdiction.

3487. Therefore you have no interests, so far as those particular drains are concerned, in raising objections to this Bill if they are not within your jurisdiction?—I have stated to the Committee that if you insert the same clauses in this Bill as you have in the Upper Conservancy, I have no objection.

3488. What interests have you if the drain of the hospital and the drain of the gaol are not within your jurisdiction in resisting this Bill, as far as it applies to those drains?—I do not resist it as far as it applies to those; but I would suggest to the Committee that it would be proper to give local Boards power to prevent those things.

3489. Have not the local Board had a report very recently about turning the sewage over the land?—Yes.

3490. Was not that favorable?—Yes.

3491. Who is that report by?—By a committee of our own Board.

3492. When was that report made?—We have had it within the two or three days; it has not been considered yet.

3493. That report is favourable to the system of utilizing the sewage over land, is it not?—It is favourable; I should tell you what the report is; we appointed a Committee to visit four or five places to ascertain the character of the present works in operation, and to consider whether it was a feasible scheme to adopt; the result of that inquiry will be, no doubt, to lead us to go further into the matter; and very probably we shall endeavour to carry out that scheme of drainage of which the irrigation of land will form a part.

3494. You do something which I suggest should be done with the sewers there, you dilute your answers?—I answer in my own way.

3495. Was it a favourable or an unfavourable report?—Then will you answer me something as well?

3496. No, I am going to ask, I am not going to answer?—I do not at all——

3497. Was it an unfavourable report, yes or no?—You must ask me favourable to what, or unfavourable to what.

3498. Favourable to the system of drainage?—To what system of drainage?

3499. To the system of drainage you spoke of, of applying the sewage to the land, to the utilisation of the drainage?—Yes, to that extent it is.

3500. So that after 20 years we have got a favourable report from your own committee?—Yes; the committee who visited five towns. You have got the whole

whole truth, because that is the evidence. It also says that we must have an acre of land for every 100 of the population. The evidence before the Committee now is 150.

3501. Sir *G. Bowyer.*] You say it is favourable. Whether the Committee are of opinion that 100 or 150 people are the proper number for an acre has nothing to do with the question?—I cannot answer the question without its condition, as to which we are led so much into error. I say that part of the report is that the irrigation system requires an acre of land for each 100 of the population.

3502. Mr. *Phinn.*] With that exception, does it recommend the Board of Health to adopt the system of distributing the sewage over the land; have you got the report?—I have it, but I cannot lay my hand upon it; it is favourable; that report also recommends that the works shall not be within a mile of the town, and on the north-east of it, which would shut out a good deal of land; it is only the report of three gentlemen.

3503. They seem to have been three very sensible gentlemen?—I have no doubt that is why I demur to its being said that we treated the question with contempt.

3504. Was Mr. Marshall formerly your engineer?—Yes.

3505. Did he make plans and estimates?—Yes.

3506. What became of his plans?—They were not carried out; not approved of.

3507. I believe one of your members threw his plans and estimates on the floor, stamped on them, and said they were too expensive?—I do not remember anything of that sort.

3508. Did Mr. Marshall throw up his appointment in consequence of your refusal to adopt his plans?—I do not know his reason; I forget now; he retired; I am sorry the plans were not more considered than they were; I should tell you that those plans proposed draining right into the Thames.

3509. I am very glad you did not adopt them, because you might have got an injunction; just let me ask you this: you at present drain into cesspools?—Yes.

3510. How many outlets within your jurisdiction are there into the Thames?—The Thames is some way from Reading; all our refuse, before it gets into the Thames, has to pass along one of its tributaries.

3511. You have no drains direct into the Thames?—I fancy not; I believe it must be so.

3512. It drains into the Kennet, and in consequence into the Thames?—Yes.

3513. How many drains are there under your jurisdiction; have you at all times drained into the Kennet; have you any large open drain or sewer that drains into the Kennet in your jurisdiction?—We have a system of sewerage.

3514. It is a very simple question which I ask you, whether you have a system or not; have you a large sewer draining into the Kennet?—There are no sewers that drain ——

3515. Pray answer the question; have you a sewer of any great capacity; is there a six-feet sewer or a four-feet sewer?—I should think we have nothing of that sort.

3516. In point of fact, everything is in cesspools, then the surface water sweeping through the land over the cesspools goes into the Thames?—No; you are aware that the great bulk of the water which goes into the cesspools, percolates and passes away into the ground.

3517. Is the water supply at Reading by means of wells?—Not now; I should think not.

3518. There are wells, are there not?—I should think there are very few now in use; there are private wells.

3519. How far above Reading is the water of the Kennet, which your waterworks distribute at Reading?—Somewhere above four miles.

3520. Four miles above Reading?—Yes.

3521. Then you have the pleasure of drinking the water of the people above you?—Yes, we have.

3522. I asked you about cesspools, because I recollect what the town clerk said; the town clerk, at page 57, Question 2819, says this, "Do outlets exist

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from those cesspools into sewers of the town? I have no doubt they do in many instances; in fact, there is no other way of getting rid of the matter; if a flood of rain comes the cesspool is filled, and the liquid must flow somewhere; I have no doubt that a vast number of drains have been made which nobody now has any cognisance of; the greater portion of the drainage of Reading is surface drainage. *Chairman.* Have you borrowed anything for main sewerage? No." After your inquiries, you have borrowed money for sewerage?—Not of late years.

3523. But ever?—Oh, yes; I do not know what interpretation you put on the word "sewerage," because that statement would not be correct; the Local Board have not borrowed money; we have spent a great deal; we spent 500 *l.* last year on sewerage.

3524. How long have you been about that?—Fifteen years.

3525. Is the assessable rating of Reading about 100,000 *l.*?—The poor's rate would be, but the rating for the Board of Health would not be quite so much.

3526. Your rate is the poor's rate?—Yes.

3527. With certain exceptions in your favour?—No, there are no exceptions in our favour; they are all adverse to us.

3528. I want to get close to the point; you object to our proposals, for this reason, that if you determine to drain into the Thames or into the Kennet, this Bill will prevent it?—No, I did not give that as my reason; that is not my reason.

3529. Then what is it?—I do not think there is the slightest chance of our doing any such thing; on the contrary, it has been suggested not to do it, and to prevent it being done as far as we can.

3530. How shall we hurt you?—You hurt us in this way, that you stop up, or take power to stop up, all the overflow of anything whatever into the river; I say that to do that would be attended with very serious evils to Reading. It would lead immediately to the making of fresh cesspools, which is the worst of all systems; and the only remedy we have for it is this irrigation of the land; we are not at present in a position to carry that out, neither have we the necessary legal powers to do it, and the expense would be very considerable, and until we have those powers and are prepared to meet the expenses the prohibition ought not to be made.

3531. Are we to wait another 20 years?—I do not think that we should; I would suggest a machinery which might answer; we should not object at all to a machinery being provided in that Bill, something like what exists in the Local Government Act, as to putting in force the power for acquiring land, or putting the Public Health Act in force; I should not object to legislation of this kind, that after preliminary inquiries in particular towns made by the Government, the Home Secretary should be at liberty to issue a provisional order, which order should be confirmed by Parliament, and after that we should be deprived of our power; I should not object to such words as those, because they would give us an opportunity of going into our particular case, and of putting aye or nay, is the evil in Reading, or is it not, so great that it ought to be stopped; but we do object to a board of 16 gentlemen in London having such powers.

3532. You appeared before the Commissioners at Reading?—Yes.

3533. Did they refuse to hear anybody suggest anything of that kind?—No; I think it right to say that the Commissioners certainly did not pursue that inquiry with the view, or put questions so as to get out the town side of the question; I had no notion of what that inquiry was for.

3534. They examined Mr. Rogers, the solicitor?—But they did not ask us any question as to how far we should like an appeal of this description.

3535. Because the Bill was in embryo?—No, the Bill was not in embryo, I beg to say, and I wish to call the attention of the Committee to it, that the notices for the Bill were given in 1865, and the investigation was made afterwards.

3536. Therefore, how could they ask you about a Bill which was to be founded upon their Report; the notices are always issued before the Bill is drawn, as you know?—No, I do not know that.

3537. As a solicitor, how can you say such a thing; do you mean to represent to this Committee that you believe the Bill was drawn when the notices for it

it were given?—I will tell you what I believe if you wish to know; you put it very strongly to me; I wish the Committee to understand that the notices were given in November, of which I have a copy here, stating the main features of the Bill, and that Report was got up after that notice was published.

3538. "Got up;" that is the way you speak of the Report?—And the Thames Purification Bill proceeded from the same quarter; I find the same Parliamentary agent's name upon it; I do not hesitate to say there is a general feeling in the country that the prohibition, this curt and prompt prohibition, of the drainage of towns, and shutting up the towns, is intended to facilitate the objects of that speculative company; whether that is right or wrong I do not pretend to say; but that feeling exists very largely in the country, and it is right that the Committee should know it.

3539. Whoever mentioned that to you?—I have heard it talked of.

3540. Who by?—I do not know that I am bound to say.

3541. If you make that sort of general imputation, you shall give me the names; did anyone of the authorities of Reading ever state that to you?—I do not think I am bound to state that.

3542. You have no right to come here and make such an imputation in such a manner?—I make no imputation.

3543. You think it is not an imputation?—You may see it in that light.

3544. You think it is not an imputation?—I wish the words ——

3545. Do you mean to say that you did not wish those words to convey an imputation; do you mean to say that you did not mean them to convey an imputation?—I meant to convey exactly what my words mean.

3546. Did you mean, or did you not mean to convey an imputation?—Imputation against whom.

3547. I ask you the question, did you mean, to convey an imputation?—I tell you I mean exactly what my words mean.

3548. Did you mean to convey an imputation?—I do not choose to answer that question unless you say upon whom.

3549. Sir *G. Bowyer.*] You must answer the question?—I did not mean to convey any imputation on anyone.

3550. Mr. Rogers, this Bill, as you are aware, is introduced by the Board of Trade—in fact, by Her Majesty's Government?—I am quite aware of it.

3551. You have stated that this Bill has been introduced to serve the purposes of a speculative company?—No, I did not say that, and I do not say so; I said there was an impression in the country that these two Bills go very much hand in hand together.

The Shorthand Writer was directed to read the answer to Question 3538 to the Witness.

3552. Mr. *Acland.*] Are you prepared to adhere to those words, having heard them read?—No; I do not wish those words to remain.

3553. Mr. *Phinn.*] Is it true, or not, that that general feeling prevailed?—I did not say that general feeling.

3554. A feeling then?—I heard it mentioned.

3555. Who suggested that the same agent's name was upon both Bills?—You will see it on the back.

3556. Is not that a suggestion of your own?—You will see the same name on the two Bills.

3557. Is that suggestion your own, that the agents are the same on both Bills?—I have the Bills here.

3558. No, no; we know the fact?—That is all I mean.

3559. Is that suggestion of your own brought in to strain the feeling against the Bill?—No, I do not know that it is.

3560. Who suggested that to you?—That is a fact.

3561. Who suggested that coincidence to you; did anybody?—I really could not answer that question.

3562. Now, Mr. Rogers, do you mean to tell me, as a solicitor and as a man practising at Reading, that you do not know whether that coincidence occurred to you, or whether it was suggested to you by somebody?—I think it is a thing which would occur to you.

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3563. Did it occur to you?—I do not say; I do not make any imputation against the agents of the Bill.

3564. Did it occur to you, or did it not occur to you?—It certainly occurred to me and others at this moment that the Bills go hand-in-hand; there is an impression of that kind.

3565. Mr. *Peel.*] It is your own impression?—I do not wish to say that by way of impeaching any one.

3566. Sir *G. Bowyer.*] Surely it is an imputation, when a public Bill is brought in, to say that it is for the purpose of serving a private company?—I do not wish to make any imputation upon any one; perhaps I should have put it the other way, that this Purification Bill was meant to facilitate the operations of this measure; that would be the more correct way of putting it: what I meant is this, that I think the promoters of that company hope to get a great deal out of this Bill.

Tuesday, 19*th June* 1866.

MEMBERS PRESENT:

Mr. Acland.	Mr. A. W. Peel.
Sir Michael Hicks Beach.	Colonel Napier Sturt.
Sir George Bowyer.	Captain Vivian.
Lord Eustace Cecil.	Mr. Yorke.
Mr. Neate.	

SIR GEORGE BOWYER, IN THE CHAIR.

Mr. *Thomas Rogers*, recalled; further cross-examined by Mr. *Phinn*.

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3567. HAVE you found the Report of the Sub-Committee of the Board of Health which you mentioned yesterday, and which you could not find at the moment?—Yes, I believe it is amongst my papers.

3568. Can you produce it?—I have no objection to produce it if the Committee think I ought; but it is a private document at present. The Board of Health appointed a sub-committee of three to visit Croydon, Worthing, and three or four other towns, and this Report has just been printed and distributed amongst the members of the Board of Health, and the officers, but not published; we are going to meet for the discussion of it; I have a copy of it here simply as an officer of the Board; if the Committee think I ought to produce it, I have no objection to do so, but the thing has not been discussed; I do not wish to show any reluctance to produce it, but it is not a public document until it has been discussed or approved and adopted; I do not think I ought to produce it, as an officer of the Board, until it has been adopted and approved of.

3569. It has got into the newspapers, has it not?—No.

3570. But it has been printed and circulated among every Member of the Board of Health?—Yes, it has.

Mr. *Phinn*.] Then I ask for it.

Mr. *Macnamara*.] If the Committee think it right that it should be produced, I have no objection to its being produced.

Sir *G. Bowyer*.] You had better produce it, Mr. Rogers.

[*The Witness handed in the same, which is as follows*:]

A REPORT to the LOCAL BOARD of HEALTH of the Borough of *Reading*, on SEWAGE IRRIGATION, by *W. H. Woodman*, Borough Surveyor.

AT a meeting of the Local Board of Health for the Borough of Reading, held on the 15th March last, a sub-committee consisting of Edward Blackwell, Esq., Mayor; Alderman Exall, and Councillor H. A. Simonds, was appointed to inquire into the practical working of the utilization of sewage. The Committee availed themselves of the professional assistance of Mr. Woodman, the borough surveyor, accompanied by whom they visited several towns where the system of irrigation by sewage is adopted. The surveyor was desired to continue his inquiries, and to embody the result of his observations in a Report.

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The Committee having carefully considered this Report, submit it with their entire approval to the whole Board.

SEWAGE IRRIGATION.

Mr. Mayor and Gentlemen,—

BY your desire I reduce the result of my inquiries as to the best method of disposing of town sewage, to the shape of a Report to the Board of Health.

Feeling it is impossible to over-estimate the importance of the question, I have taken great care to obtain the most reliable and trustworthy information, which I have verified by a close personal inspection of the different works and systems in operation.

I have visited, in your company, Croydon, Norwood, and Worthing; and, alone, Edinburgh, Carlisle, and Worksop.

At Croydon, Worthing, and Edinburgh, the sewage flows on the land in the same state in which it passes from the sewers; at Norwood it is filtered; at Carlisle it is disinfected; and at Worksop solidified.

I have examined the sewage as it passed from the mouth of the main drains, and in every case there was almost an entire absence of smell, and freedom from any appearance of solid matter.

Experience has proved that when sewage is sufficiently diluted, is fresh and in motion, little or no smell arises from it, and, in passing through the sewers, the solid matter which is not taken into suspension is reduced to a substance closely resembling pulp, which, in numberless small particles, may be traced floating under the surface of the liquid.

When the sewage is passing over the field, in the process of irrigation, or along the ditches and carriers conveying it, very little, if any, odour arises. When disinfected, as at Carlisle, I could not detect the slightest, although my visit was in the middle of an extremely hot day, with the sun shining full on it. At Edinburgh it was very palpable, from a cause presently stated, and easily obviated. The effluent water from sewage, disinfected or natural, which has passed over a field 230 yards in length, is as clear to the eye, and as tasteless, as pure river water, proving land to be the best purifier.

During all hours of the day, and in all seasons of the year, the sewage is constantly passing over the land, the area of which is proportioned to the amount supplied; and it is used with equal success upon the light blowing sands of Edinburgh, the gravelly reclaimed river bed of Carlisle, the clay of Norwood, and the brick-earth of Worthing; indeed, it seems adapted to all soils.

The fields under irrigation can be cropped with Italian rye grass, and grazed or cut green for horses and cows; or they can be fed by sheep, the plan at present adopted at Carlisle, where, owing to the cattle plague having decimated the stock of the surrounding districts, it is not required for other use. Hay may be made from the grass, though in this variable climate it is attended with great risk, the grass being too heavy. I have, however, seen some exceedingly good hay made from it.

I have made particular inquiry, especially of cow-keepers, whether cattle like the grass from irrigated fields, and they have, without exception, told me, the cows not only prefer this grass when fresh cut, but give better milk and a larger quantity when feeding on it. I can speak from observation of the good grazing for sheep at Carlisle. The irrigated grass is softer, sweeter, and freer from moisture than ordinary meadow grass; it does not bleed when broken, like common grass.

Irrigated land produces annually from four to seven crops of grass. At Edinburgh the farm is divided into plots of from half to three-quarters of an acre, which are yearly put to public roup or auction; it has realised as much as 41 *l.* 10 *s.* per Scotch acre, but the present letting varies from 12 *l.* 10 *s.* to 20 *l.* per acre, the demand being considerably affected by the cattle plague. At Croydon, the lessee of the farm, Mr. Marriage, has had four crops a year, and sometimes five, and sells them at the relative rate per rod of 1 *s.* for the first crop, 9 *d.* for the second, 6 *d.* for the third, and 4 *d.* for the last, being an average of 20 *l.* 13 *s.* 4 *d.* per acre. At Norwood, where the works have been only one year in operation on part of the land, the yield has been 50 tons to the acre. The area of the land under irrigation is 36 acres; it is let to the present tenant for a term of three years, at 6 *l.* per acre. The Board of Health has the land on lease for 12 years, and the tenant has offered 3,000 *l.* for the remainder of the term.

At Worthing, the produce of 25 acres realised in one year 664 *l.*, or about 26 *l.* 11 *s.* 2 *d.* per acre, and the keep of three horses. The crops have varied from five to eight; owing to the incompleteness of the drainage and waterworks, only 25 acres have been under irrigation; the sewage works belong to a company; amongst the shareholders are four members and one officer of the Board of Health. Their first purchase was 42 acres, and they have since bought 50 acres, which together will be sufficient for the sewage of the whole town. The sewage is given to the company gratuitously for a term of seven years, at 10 *l.* per annum, for the next seven years, and after that at a sum to be mutually agreed upon.

I observed a hesitation on the part of the sub-lessee at Carlisle to make any positive statement as to the value of the crops. I mentioned to him the above facts, and inquired if his experience confirmed them; he replied, it decidedly would; that, before he rented his works, he saw some of the places I had visited. I knew from personal experience that the information I had obtained was correct.

At

At Worksop, the solid part of the sewage is allowed to subside in open canals, and is sold in that state at 46 *l.* per annum for a population of 8,000; but the Board of Health are by no means satisfied with the system, either as regards the profit, or its being sufficiently free from nuisance, and plans are now being prepared for utilizing the sewage on the surrounding fields, in a liquid state.

The plan of applying the sewage may always be very simple and inexpensive. At Croydon, the sewage farm is at Beddington, about three miles from the town, containing 312 acres, about 270 of which are under irrigation; the sewage delivered on the farm is from a portion of the town, with a population of 25,000 to 26,000; about 30 acres are irrigated every day, consequently no part of the farm is longer than 10 days without it. The closed main sewer, at about one mile from the town, is discharged into an open ditch, and beyond that point Mr. Marriage has utilized the old ditches as conduits for the sewage to every part of the farm. These ditches are banked up with clay to a height a little above the field level; from these ditches small trenches, called "carriers," are cut across the fields at intervals of about 50 feet, and terminate in a "pick up" ditch, at the opposite end of the field; when the field is to be irrigated, the sewage is allowed to run along the carriers; they are blocked at intervals of 20 feet, or less, as occasion may require, by boards fitted across, which causes the sewage to overflow and run on the intervening land; when sufficient has been discharged the board is taken up, and fixed 20 feet lower across the carrier, and so on, till the whole field has been covered with sewage; then the mouth of the carrier next the main conduit is stopped with clay, preventing any sewage getting into it. The effluent water runs from the bottom of the field into the "pick up," and is carried into the River Wandle.

Ordinary sluices in the main ditches regulate the supply to outlying and separated fields. A large quantity of greatly diluted sewage is supplied to this farm, as the surface drains of the streets are connected with the sewers.

When the system was first introduced the sewage was passed through two filtering tanks, each about 300 feet by 40 feet, but the plan did not answer, and is now discontinued, only the upper part of the tanks being used to deposit the silica and settlements from sink and street gratings, which is occasionally dug out and mixed with the ordinary dry refuse of the town, and sold at 2 *s.* per horse load. Under the pressure of threatened law-suits the Board of Health took a lease of the farm at 4 *l.* per acre (the fair rent is estimated at about 50 *s.*). They re-leased it to Mr. Marriage at 5 *l.* per acre, giving the sewage free. The works on the farm have cost Mr. Marriage about 10 *l.* per acre; part of the land has been sewaged four, and another part seven years. One waterman and a boy are sufficient to attend to the irrigation of the whole farm.

I was informed by the Chairman of the Board of Health that in case they cannot obtain a renewal of the lease of the farm at Beddington on reasonable terms they are prepared to purchase a farm a considerable distance from the town at an elevation of 150 feet and pump the sewage to it. The Board would not renew the lease to Mr. Marriage except at greatly increased rent.

At Edinburgh I was unable to get any satisfactory information as to the period the land had been irrigated, report says nearly two centuries. The manager of the works has been engaged on them 21 years, and tells me they were in the same state when he commenced as now. An eminent engineer of the city has known them 50 years in much the same state. The sewage fields (the Craigentinney Meadows) are about two miles from the city, between Portobello and Leith on the shore of the Frith of Forth, and contain an area of 225 acres, which receive the sewage of about 50,000 inhabitants. The council of the city continued the main drain as far as they thought necessary to prevent its being a nuisance to the inhabitants, and connected in with an old burn or ditch running into the Frith. The owner of the land through which the burn passed soon turned the contents to account for irrigating the adjacent fields. The plan adopted is similar to that at Croydon, except that the main conduits are carried in circuitous routes, and are very large and uneven; in the lower parts there is a considerable accumulation of sewage which cannot pass off, it stagnates, becomes putrid and objectionable. The owner of the land does not pay for the sewage, and the council cannot now make him; 200 acres are irrigated by gravitation, 25 more by pumping with a common hand pump. The proprietor has more land adjoining, and when there is a surplus of sewage or a brisk demand for grass, he irrigates that also by pumping; the effluent water flows into the Frith.

At Norwood the general arrangements are similar to those at Croydon, except that the sewage passes through a filter of burnt clay, which causes a deposit of the solid matter, and allows only the sewage water to pass through; the effluent water flows into the Ravensbourne river.

At Worthing the general principle of Croydon has been adopted, but the main carriers are earthenware pipes; where a cross carrier is required, an iron pipe the same size as the drain pipe is introduced, with a lateral opening fitted with a sliding sluice door, to admit the flow of sewage into a moveable iron trough about six feet in length, which conveys it into the open carriers. The sewage farm adjoins main roads and valuable building land; this plan is adopted to prevent any unpleasant odour. In this case the sewage is pumped; the main sewer discharges the sewage into a well 30 feet deep, 10 feet diameter; the last 200 feet of drain is increased to 5 feet 3 inches, by 3 feet 6 inches, to serve as a reservoir, the pumping being discontinued at night for 10 hours. The sewage is pumped from the bottom of the well through a stand pipe 15 feet in height into the main carrier. One

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engine of 16-horse power was pumping the water for the town and the sewage to the field. The cost of the sewage work and mains has been 1,650 *l.*, the population of the town varies from 7,000 to 10,000. The effluent water is conveyed into the sea.

At Carlisle there is only one main open carrier; cast-iron half round pipes are used for the branch carriers, and are moved in any direction required; as they are found troublesome to move and occasion loss of time, the plan of closed carriers will be substituted; 106 acres are under irrigation with sewage from a population of 17,000 to 18,000. The sewage runs into a well about 20 feet deep, and then through sluice doors into another; above the latter are three tanks about 3 feet diameter, in which the disinfecting fluid is mixed; one contains lime, another a chemical prepared by Mr. McDougall of Manchester, the lessee of the land; they are diluted with water, and afterwards mixed together in the third tank, and from it run through a small pipe into the well below, from which the contents are pumped by a four-horse power engine into the main carrier. I believe the chemical to be nothing more than carbolic acid. The disinfecting process is very inexpensive: the sub-lessee, Mr. Hetherington, says it is inappreciable, and is certainly ineffectual. At present a nominal charge only is made for the sewage; the works have been in operation about six years; the effluent water flows into the River Eden.

At Worksop the sewage is passed through six canals, each 200 feet long, about 6 feet wide, and through two filters of limestone, one of cinders, and one of boulders, or very large pebbles. The solid matter is deposited, and the effluent water runs off into the River Ryton, but far less pure than that which has passed over land. There is a considerable smell from the solid matter removed, and from the putrid scum which rises to the top of the sewage in its passage through the canals. Lime is applied to mitigate the nuisance, but without satisfactory result.

Sewage is utilised upon a smaller scale at many public institutions in various parts of the country. To my knowledge, the nearest to Reading is Broadmoor Asylum, of which Sir W. C. Hayter, the Chairman of the Council of Supervision, writes, under date 10th March last, "I desire to say that nothing can be more satisfactory, both in a sanitary and agricultural point of view, than the sewage arrangements and distribution of the sewage at Broadmoor." Dr. Meyer, the resident medical superintendent, concurs in this opinion.

The plan adopted is to pass the sewage through a filter, but not deodorised or disinfected; it then flows on to the land, which is within 200 yards of the asylum, for irrigation. The solid matter is removed every six weeks, mixed with ashes, and applied as ordinary manure, to which it is considered equal in value. The quantity of land irrigated by liquid sewage is 19 acres; population, 600; crops, vegetables and rye grass (five crops of the latter have been cut in one year); soil, sand and gravel. The effluent water passes into a small stream in the low land, a short distance from the asylum.

There are no fixed rules applying to all sewage farms. Each must be treated according to the level, the soil, the amount of dilution of the sewage, &c.

The following conclusions have been forced on my attention by observation and the recommendation of several practical and scientific men, as being most worthy of attention, to make sewage irrigation successful in producing the largest amount of good to the land, and the minimum amount of injury to the receptacle of the effluent water.

The area of the land should not be less than one acre for every 100 inhabitants.

The land should be so arranged that the proportionate part should be irrigated each day.

The sewage farm should be a mile distant from the inhabited parts of a town.

It should be east or north-east of the town if within that distance.

The main carriers should be closed. Drain pipes appear to form the best and cheapest carriers. Air pipes, which may be very small, are required at intervals.

Disinfecting, as at Carlisle, may be resorted to, to remove any prejudice that may arise.

I consider a fair and impartial inquiry into this subject will induce a confirmation of the unanimous opinion expressed by the Commissioners appointed to inquire into the best mode of distributing the sewage of towns, and applying it to beneficial and profitable uses, whose Report, after an investigation extending over eight years, is to this effect, that "the right way to dispose of town sewage is to apply it continuously to land."

In my judgment, the practical result to be derived from this inquiry is, that the sewage of Reading can be utilised, without pollution of rivers, with perfect freedom from injurious or unpleasant results, and at a trifling cost, and therefore should remove any prejudice which may have existed towards the drainage of the town. The value of the sewage would, in this, as in other towns, materially reduce the annual rate entailed by so great a boon.

I am, &c.
(signed) *W. H. Woodman,*
Borough Surveyor.

Reading, 26 May 1866.

3571. This is a report of Mr. Woodman, the surveyor?—That is all.

3572. I thought you told us there was a sub-committee?—Yes; that is not a document fit for publication; it is not intended for publication as it stands.

3573. It

3573. It is a public body discussing a public subject?—No doubt; it is a report from the surveyor of the Board, to be considered by the Board as the result of a visit to these three places.

3574. Now, Mr. Rogers, will you allow me to ask you if Mr. Stephens, the chairman of the waterworks company, is to be one of your witnesses on this occasion; is he to be called?—No.

3575. Then let me ask you a question or two; first of all, is it true, as stated by you, that the present supply of water at Reading is unobjectionable?—That has been the result of an analysis of the water.

3576. I see at page 99, Question 2889, there is this question:—"Is the water supply from the company generally satisfactory in quality? The present supply is unobjectionable, I think."—That evidence was given before the Rivers' Commission at Reading.

3577. Is that an accurate statement of yours?—It is my belief that the supply of water at Reading is not open to objection; I believe that that is so; but let me append to that, that the supply of water was objected to in consequence (I think those questions are the sequence of the matter) of the discharge of the refuse of some paper mills above the source of supply on the River Kennet, and the Board of Health instituted an inquiry into that; I had the water analysed, and the result of that was satisfactory to us; we did not think the water was polluted by means of it; I believe the real question follows upon it.

3578. That being so, and you taking your water from the Kennet four miles above Reading, how is your objection sustained to this Bill for not purifying the Kennet above Reading if the present state of the water is unobjectionable?—I think the observation which is made is the strongest argument which I can offer against this Bill; we have here the paper-mills, only about two miles, or perhaps, one mile, above the source of the Reading water supply; we have a complaint made of the pouring of that refuse into the stream just above the point whence the water is taken; the water is supplied, and analysed and found innocuous; and therefore my proposition is this, that, if it be true, after the water is filtered by the water company at Reading, that it is really going very far to say that the pouring of overflow water, such as I have described it, from our drain at Reading at a distance of 60 miles from London, renders impure the water supply of the metropolis; that is our view of it; but what I have stated of the pollution of the Kennet is this, that if we pollute the Thames by what we pour into it, then the Kennet, being a much dirtier river than the Thames, must be worse; but if the Kennet is good, of course the Thames must be better.

3579. Do you mean to say that the Kennet is dirty above the source of your water supply in the same way that it is below the source of your water supply? It is probably little better below the water supply, because there are tan-yards which pour their refuse into it above; but I mean to say that the Kennet is a dirtier river than the Thames.

3580. Now, we will see who dirts it; is Mr. Carter the surveyor of your Board?—Yes.

3581. Is he to be called here?—No.

3582. Now, let us see what Mr. Carter says in answer to a question of your own—3642, page 124—(Mr. *Rogers, through the Chairman*): "The whole of this (*pointing to the plan*) is covered with houses considerably below the level of the cesspool, is it not?" What point on the Kennet were you pointing to there?—I think it is necessary to read the next question in order to explain it.

3583. Will you answer my question?—You are asking me with reference to a question after some months; allow me to read the context, and then I will tell you; you must not expect me to give you an answer, after the lapse of some months, without referring to the context, especially considering the tone in which you are cross-examining me; and I appeal to the Committee whether this is a right tone to address to me.

3584. Sir *G. Bowyer.*] I think the best course is always to answer the question direct; of course you can have any amount of time that is necessary for you to explain afterwards?—That is what I wish to do; the next answer is an explanation of it. "The whole of these houses (*pointing to houses nearer the river than the well*) drain into the river; when my men were cleaning out this part of the River Kennet below Blake's Bridge;" that tells you that it would be the River Kennet below Blake's Bridge.

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3585. You pointed to a place on the River Kennet below Blake's Bridge?—Yes.

3586. Mr. *Neate.*] Where is Blake's Bridge at Reading?—It is near the outfall of the Kennet; it crosses the Kennet.

3587. Mr. *Phinn.*] How near is it to the junction of the Kennet with the Thames?—Very near.

3588. About 100 yards or 200 yards, or something of that kind?—It may be 300 yards; there is a lock there also.

3589. "When my men were cleaning out this part of the River Kennet, below Blake's Bridge (*pointing to the plan*), a month ago, they were taken very ill from the stench arising from it. The weeds had been growing for many years to the width of 25 feet, and sometimes 40 feet, and all that portion of the river was entirely blocked up; along this portion by Swain's Wharf, there used to be 16 feet of water forty years ago, and men used to bring barges of 140 tons burthen; now it is not more than three feet deep, and when we put a punt pole down it went down 12 feet in mud; the blocking up was not altogether from refuse from the gas works, but from Holybrook and the Minster Stream, carrying refuse from the western part of the town that comes down through Blake's Lock; there was a lock there some time back, and we put a new lock there; that was the cause of this river having grown to the extent it had, it was once merely a ditch. Under whose orders did your men cleanse the river?—The medical officer reported upon the state of the river, and I had to report upon it, and the district committee went down with me, and told me to do the work; I took away an accumulation in one place 25 feet wide, and in another place 40 feet wide. What did you do with the refuse?—I let it float down the stream. Was your Local Board of Health cognisant of the manner in which you got rid of this refuse?—No, they always allow me to do things in the best way I can." Is there a district committee to each district Local Board of Health?—We form some committees as occasions arise.

3590. What is meant here by the sub-committee?—I suppose a sub-committee which had been formed for some particular purpose in that neighbourhood.

3591. As I understand it, you say in answer to Question 3647, that there was an order to cleanse it, but not to throw it into the Thames?—I have explained to the Committee that I believe that this portion of the river, and I hope I am accurate in saying so, is a cut under the jurisdiction of the Thames Commissioners. We repeatedly applied to them to clear this river, because of the accumulation of weeds. The weeds has been growing for many years to the width of 25 feet, and sometimes 40 feet, and all that portion of the river was entirely blocked up. I think the fact was that the blocking up arose from the neglected state of this portion of the river. We applied to the Conservators also to keep the towing path in a proper state of repair. Their answer was, they had no funds. I did not consider it was part of our duty at all (that is, the Local Board of Health) to cleanse this river in this way; it belongs to the Thames Conservators; but really it was thought better that it should not remain in that state, and I advised the Board to allow the refuse to be taken out of the river. We assumed that it was to be taken out in that way.

3592. Mr. *Neate.*] You mean all below Blake's Bridge?—Yes; I believe I am right in that.

3593. Mr. *Phinn.*] Are you certain of it?—I believe so.

3594. Is it the Thames or the Kennet?—The Thames Commissioners have a cut on the Kennet up to Blake's Bridge; I believe that is the boundary of their jurisdiction.

3595. Mr. *Neate.*] They did not deny that it belonged to them when you applied to them?—Oh dear, no; they pleaded the want of money; in truth, we, the Board of Health, felt that this obstruction to the flow of the river was causing injury and annoyance, and therefore we went rather beyond our powers.

3596. Mr. *Peel.*] You have spoken of the limited powers of the Board; what did you regard as the limit that you proposed to be laid before the Commissioners. So long as the river was pure, it did not matter, but the moment it became offensive to the nose, then you thought you ought to step in?—I think it is a great defect in the Public Health Act. We have no power, so far as I can see, to keep the river that goes through the town clean, except under the power which enables

enables us to remove a nuisance. The only power which we have to deal with water is when it comes under the category of waterworks, which these rivers do not, because they are not used for the supply of water; I think that is a very great defect. I wished to convey to the Committee yesterday that if we had power to prevent private sewers being emptied into the river, and power to keep the river clean, I believe that we should render much greater improvement to the river than can ever be done by a Conservancy Board in London. That is my impression.

3597. Mr. *Phinn.*] I think we seem to be coming to an agreement; you do not object, then, to the river being kept free from all this sewage?—Certainly not, and I never have.

3598. You think you are the people to do it, and not the Navigation Commissioners; is that it?—Yes, I have a strong opinion upon it, and more than that, I think we could do it if we had sufficient power.

3599. You could; but would you?—Certainly.

3600. Yesterday you fought most desperately for the right of retaining the power to pour this sewage into the Thames?—You must excuse me; I did not fight for it; you pressed me very hard as to what I objected to, and I said that we contended for keeping our powers as they were, and you wanted me to say for increasing the pour of the sewage into the Thames.

3601. I do not want you to say one way or the other?—We do not wish to pour the sewage into the Thames at all. It has been our settled maxim not to do it; we fine people who do it, when we can; only a fortnight ago I summoned a man before the magistrate for connecting a drain of his with ours, in order to carry his sewage into the Thames; that is the best illustration I can give you of our action on the subject.

3602. When there is not a Local Board of Health, who is to prevent ordure being poured into the Thames?—I think you will find ample powers given to local authorities under various names; there is no town of any importance which has not either a Board of Health or Paving Commissioners.

3603. Supposing a gentleman builds a villa just outside your jurisdiction, and chooses to drain his sewage into the Thames, who is to prevent him?—I do not object to your doing that, if Parliament thinks it right.

3604. Who is to enforce the prohibition?—I do not object to the Conservators of the Thames having such powers, if you think it is right to give them to them, to prevent a gentleman from pouring out the drainage of his residence into the Thames; I do not object to giving them those powers.

3605. Beyond the jurisdiction of the Local Board, you would not object to the Thames Navigation Commissioners having authority, but within the jurisdiction of the Local Board, do you think that they ought not to have authority?—As I read this Bill ——

3606. Will you answer the question; never mind as you read the Bill; I ask your view of it: within the jurisdiction of the Local Board, you think the Local Board ought to enforce the prohibition; is that so?—Yes.

3607. Beyond the jurisdiction of the Local Board, you would not object to giving power to the Thames Navigation Commissioners?—Or any convenient body.

3608. Or the Conservators?—I think that is a matter of trifling moment.

3609. Now, you were going on to say something about as you read the Bill; I am perfectly willing you should say so, now you have answered the question?—As I read this Bill, you do not give any one power simply to prohibit the passage of sewage into the river by any drain which may be opened after this time; it is not giving power to the Conservators at all; no gentleman living on the Thames could open a cut into the River Thames so as to carry any sewage or noxious or offensive matter into it; it is a statutory prohibition; any one might object to it; if he does so now, you take power to stop him; I do not object to your having that power.

3610. Of course, if there is a prohibition, there must be some one to see to it?—Every one must see to it.

3611. Sir *G. Bowyer.*] What is everyone's business is nobody's business?—I do not object to that power being given, say to the nearest Board of Health; why should we not have it at Reading; we are more interested at Reading, assuming that this sending of the refuse corrupts the river, in having the river pure than any one else; I shall be glad to see it done.

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3612. You think the Bill, then, as it stands, will enable anybody, if a gentleman opened a drain into the river, to prohibit him sending the sewage into the Thames?—I did not say as it stands, because you have put in a clause that nobody shall take proceedings under this Bill except the Conservators; strike that out, and I am content.

3613. Do you, as representing the Local Board of Reading, now state to the Committee that you do not object to the prohibition of sewage being poured into the Thames?—Sewage in the strict definition of it—that is, what we ordinarily mean by sewage—refuse and water-closet contents, I shall not object to.

3614. Water bearing sewage or excrementitious matter, you think, ought to be excluded from the Thames?—Yes, and I say it is at Reading now; at least, it is as far as we are empowered to do it.

3615. Do you know a gentleman named Bulley, Francis Arthur Bulley?—Yes, I do.

3616. Is he a surgeon residing at Reading?—Yes.

3617. Did you hear him examined before the Commissioners?—I do not think I was there at that moment.

3618. He states in answer to Question 3766, page 177, this: "Have you observed the condition of the Kennet year by year during your practice here?—Yes, I have noticed it particularly; there is a space which is quite a *cul de sac* before you reach the pound on the Kennet, in which I have observed an immense quantity of human ordure resting there for days together; now that the navigation of the river is very much diminished in consequence of the railway, of course the gates are not opened so often as they used to be, and the water does not flow through there; I have often noticed what I have described for days together; year after year it has been the case, and I believe it is so now." That was last November?—Last November.

3619. Yes, 16th November 1865, this gentleman seemed to have been examined on?—Yes.

3620. Is that consistent with your knowledge?—No, I have never seen anything of that sort myself; it is very possible; you see he gives the reason of the locks being shut up, inasmuch as some private sewers go into the river, and the drainage comes down from the places above; it is very possible that such a thing might have been seen there; I say that is my point, we have not the power of prohibiting that.

3621. I thought you said you did actually prohibit people from pouring their water in?—No, into our drains; if you heard me examined in chief, I expressly said that the Local Board have no jurisdiction over private sewers; our duty is to drain the town, and the Act contains a provision that no one shall connect a drain with our drain without our previous consent; that is the *modus operandi* by which we prevent people carrying sewage into the river, but we do not consider that we have at present power to prevent a person draining himself into the river, so that it does not interfere with us; I say, if we have that power we can stop these nuisances.

3622. You think it desirable that some such provision should be enforced as is contained in the Bill, but that enforcement of it should be left to the local authorities; is that your view?—I think the power of enforcing it, as against the owners of a private drain, should be given to the local authorities.

3623. Do you think the local authorities ought to be themselves prohibited from passing any sewage into the Thames or pouring the contents of any sewer into the Thames?—I tell you frankly that I have advised our Board for years past that it was not a thing that ought to be done, because, as I tell you, as the Committee will gather from any answers I have made, that I do not object to purify the Thames, nor have I objected to this irrigation of land; but I think it is difficult to drain a town so as to carry the whole of the sewage of it into the Thames without injury, and I have advised the Board not to allow or sanction or carry out any scheme involving that; I mean with reference to our own sewage over which we have power.

3624. Do you make a distinction that you should be allowed to carry out some of it?—We can only deal with that over which we have jurisdiction.

3625. I want to know, in fact, whether you claim the right to carry some portion, if not all, of your sewage into the Thames, or into the Kennet on its way to the Thames?—I do not object, on the part of the Local Board of Reading,

ing, if the Committee thinks it right that they should be prohibited from carrying what I call sewage into the Thames; I do not object to that, because I say we do not do it now, and we shall not do it without the prohibition.

3626. Sir *G. Bowyer.*] Then, what you would carry into the Thames is not sewage?—Quite so; that is my argument; I wish again to state to the Committee my very strong belief that this Bill, as it is framed, would prevent our carrying off our overflow, which is not, in fact, a seriously injurious matter at all; I believe this Bill would involve us in great difficulty, and would exaggerate the evil of the cesspool system in Reading to a very serious extent indeed.

3627. How could it exaggerate the evil of the cesspool system in Reading unless it was proposed to send into the Thames what would be put into the cesspool; I do not see the connection?—I will explain it; it is the facility of getting rid of this surface and overflow water by our proposed system of surface drain which prevents that water getting into privies and cesspools; it is when the water gets into the privies and cesspools that the evil arises; within the last four or five years we have laid out, I should think, from 3,000 *l.* to 4,000 *l.* for the sole object of getting a good surface drainage, because if you get that off, then the cesspool does not overflow.

3628. You said that what you sent into the Thames is not sewage; do you mean to say that it is pure water?—No, I do not say that.

3629. It is not?—That is my objection to the Bill; I do not think we ought to be prohibited from sending it there; I do not think it does injury to anybody; I think it might be called injurious matter.

3630. Mr. *Phinn.*] Is it offensive matter?—No.

3631. Mr. *Neate.*] When you talk of the overflow that gets into the Thames, you mean the overflow of the cesspools?—No; I mean the general surface water.

3632. When you talked of overflow, what overflow did you mean?—There has been a great deal of overflow, but by a good surface drainage system you can get rid of that.

3633. When you talk of overflow, you mean the overflow of cesspools?—Whatever there may be in the town, including that, if there is any.

3634. The overflow means nothing less: the surface water is not overflow. Do, if you please, answer my question; when you talk of overflow, do you or do you not mean the overflow of the cesspools?—Yes; if there is any overflow from the cesspools it would mix with the surface water.

3635. My question is a question which can only be answered by yes or no; when you talk of overflow, do you mean the overflow of the cesspools, yes or no?—Well, I will say, yes.

3636. You would have saved a great deal of trouble if you had said that before. You said you sent no sewage into the Thames; when you said that, did you mean the Thames directly, or that you did not send anything into the Kennet?—I mean into the Kennet; we do not carry it into our sewer, if it is done it is done by stealth.

3637. Mr. *Phinn.*] Now, I will ask you to give me yes or no to this question. Do you call the overflow carrying water from the cesspools offensive matter?—It would be offensive at the cesspools, but not offensive as it is carried into the river where it is mixed with the surface water.

3638. Is it injurious matter?—Not with that exception.

3639. Then, how will the Bill hurt you?—Because, I believe, as we have had evidence here, that there are theoretical gentlemen who will say it must be necessarily so, and we cannot meet evidence of that sort.

3640. You are afraid that Mr. Rogers' evidence will not be taken that it is not offensive and injurious matter against the preponderating evidence of other people?—I say it is impossible practically to meet the evidence of gentlemen who attain a certain position in any profession and who will come forward and say what they like.

3641. Therefore the tribunal is to take Mr. Rogers' view, and not the view of these gentlemen?—I do not say so.

3642. You are afraid that they will take the views of those gentlemen in preference to Mr. Rogers' view?—No, that is not so; I will give you yes or no now you put questions to which I can say yes or no.

3643. Does it not come to this, that you are afraid your view will not be

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adopted by the tribunal?—No, it does not come to that; if you like, I will give you an illustration.

3644. I do not want you to give me any illustration; I want to know whether you say it will not be offensive; you say it will not be injurious at the point of its flowing into the Thames, but you say you are apprehensive that other people may entertain a different opinion?—No; the prohibition is that we shall not drain what is called offensive or injurious matter.

Captain *Vivian.*] That is not an answer; you are asked a very simple question.

3645. Mr. *Phinn.*] Are you not afraid that what you deem not to be offensive, or not to be injurious, that other people will deem to be offensive or injurious?—I think that that class of gentlemen to whom I referred, the scientific people and theoretical gentlemen, would pronounce it to be so.

3646. Are you afraid that the legal tribunals would give weight to their opinions against those which you have expressed; now, surely, that is a very simple question?—I would rather not be subjected to the prohibition; if you read the clause of the Bill you will find if the Thames Conservancy thinks it offensive or injurious.

Sir *G. Bowyer.*] I do not think it is necessary to pursue this.

3647. Mr. *Phinn.*] No; it is not necessary to pursue that, because the Committee now see the value of this gentleman's evidence. Now, I will ask you a question or two about the representation?—In justice to myself, I hope the Committee will allow me to read to them the words of the Bill: "If the Conservators at any time after the passing of the Act consider that the flow or passage thereof as aforesaid injures, or tends to injure, the water of the Thames, they may give notice."

3648. Sir *G. Bowyer.*] You complain of that?—I do; the learned gentleman puts it to me that I am afraid that the legal tribunals will not adopt my view; that is not it; the Conservators, if they think they have the power to give us notice to shut up our drains, will not attempt to do so.

3649. Mr. *Phinn.*] They may give you notice, but they cannot enforce it except through the proper tribunals; you must go to the justices?—I beg pardon, that is not so.

3650. We have got a lawyer in the chair, and he will just give us his view; you say that the Conservators may give notice who is to enforce the notice of the Conservators?—Let me read the clause: "If the Conservators, at any time after the passing of this Act, consider that the flow or passage thereof as aforesaid injures or tends to injure the water of the Thames, they may give notice in writing, under the Common Seal, to the person causing or suffering the same so to flow or pass, to the effect that they require him to discontinue the flow or passage thereof, as aforesaid, within a time to be specified in the notice, not being in any case less than 12 months, with power to the Conservators to extend the time specified in the notice by writing under their Common Seal." Now, we are coming to the point. "Any person to whom such notice is given by the Conservators, shall, notwithstanding anything in any other Act, comply with the requisition of the notice."

3651. Go on?—"And if any persons fails to do so" (that is, to comply with the requisition of the notice) "he shall be guilty of a misdemeanour, and shall be liable on summary or other conviction thereof, to a penalty not exceeding 100 *l.*, and to a further penalty not exceeding 50 *l.* for every day during which the offence is continued after the day on which the first penalty is incurred."

3652. Read on?—"Provided that in any prosecution for the misdemeanour aforesaid, the defendant shall not be liable to conviction if he shows to the satisfaction of the justice or justices, or court, by whom the matter is heard, either of the following things: namely, first, that the Act or thing complained of does not injure or tend to injure the water of the Thames; or, secondly, that it is not reasonably possible for him to discontinue the doing of the Act or thing complained of."

3653. Sir *G. Bowyer.*] The whole question comes before the justices judicially, and they have to decide whether it is injurious, and also whether it is, or is not, reasonable and possible?—They have to decide under the second section whether it injures or tends to injure the water of the Thames.

Captain

Captain *Vivian.*] It is quite clear there is a judicial tribunal before whom you may be brought, if you do not obey the orders of the Commissioners.

3654. Sir *G. Bowyer.*] It is evident from what you read that the power of the Conservators is not an arbitrary power, because it is one that can be tested by the decision of a legal tribunal?—In that limited sense.

3655. What do you want more?—The words "injure or tend to injure the water of the Thames," are too large.

3656. Mr. *Neate.*] And you may remove it by certiorari to the Court of Queen's Bench; how can you complain of its being an arbitrary power?—The words are too large.

3657. Mr. *Phinn.*] Suppose the Reading justices agree with the Reading lawyer, that it does not injure or tend to injure, then the summons will be dismissed?—Yes, it may be taken to the Court of Queen's Bench.

3658. You think that the Court of Queen's Bench may not agree with Mr. Rogers?—No.

Sir *G. Bowyer.*] I think we had better leave this, and pass on.

3659. Mr. *Phinn.*] I will only ask Mr. Rogers another question or two about the constitution. Is Mr. Blackwell, the mayor of Reading, likely to be here?—No; he has left home, or he would have been here.

3660. Perhaps I may ask you whether you agree with his answer at page 97, Question 2828, "Is it your opinion that some form of government should be established, which shall take cognizance of all the interests connected with the river?—Yes, that is quite my opinion." You claim two members for Reading. Do you object to the Board being one for the Upper and the Lower Districts, or do you want two Boards?—I do not care particularly which it is. Our view on that subject is this; we understand the Conservators rather object to have their number diminished; my opinion is, the better course would be for some of the present Conservators to retire, and to make room for some members from the Upper Navigation, so as to get a smaller Board; I prefer a small Board, because I think, for administrative purposes, a small Board is better than a large one; if they do not wish their number to be reduced, the only alternative is to increase it.

3661. What I want to know is, whether you want a separate Board for the Upper Navigation, and a separate Board for the Lower Navigation; or do you think the two interests might be well administered by one Board?—Assuming that they have representation, I mean the Upper Navigation, then I think the two interests could be well represented by one Board.

3662. I suppose you know enough to know that London is either the source or the terminus of most of the traffic on the river, is it not?—I should think there is a great deal of local traffic, or there would be if the navigation were put into a proper state; there would be a large amount of through traffic if the navigation was in a good state.

3663. Of course you think it desirable that one body should fix the rate throughout, and that there should not be two rates?—I think it is desirable.

3664. Of course you could only do that by having the affairs of the river administered by one body?—My mind leans in that direction; I should rather say, let nine of the present Conservators retire, and nine come in, if that suits their view.

3665. I am not merely on the point of administration; there is one dividing point where the interests differ, but you could not find a dividing point on the river where the interests on one side of the line would be different from the interests on the other?—I should think that the navigation of the Upper District is rather different from that which is towards the neighbourhood of London.

3666. For instance, if the river were in a good state, I suppose you might have pleasure traffic coming up the river from London?—That traffic would, I think, be local.

3667. It would come from London, and drop its passengers on the river, would it not?—I should doubt if you would get pleasure traffic from London down to Reading or Oxford; we should have a good deal of it on the river itself.

3668. Now, with regard to commodities, do you think you would have the

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Newcastle coal up from London?—I have heard conflicting statements about that, as to whether it would be able to compete with the railways; I think, if the navigation is in a good state, that all heavy goods will be brought.

3669. What do you produce at Reading besides biscuits?—We have a large iron foundry.

3670. And a good deal of agricultural produce?—Yes.

3671. You claim, I think, two members for Reading?—Yes.

3672. You think that direct representation is necessary for Reading, what interest have you in the river beyond this traffic and this stercoracious interest, with reference to pouring the sewage into the river, what peculiar interest has Reading in it?—Beyond the traffic?

3673. The traffic and this interest of pouring the sewage into the river, or controlling the pouring of the sewage into the river?—I suppose that the traffic is really the main question, that is, the navigation of the river.

3674. You admit, I suppose, in common with everybody else, that the river is in a very bad state at present?—No doubt, that is for navigable purposes; I do not admit it is for other purposes; I believe that at Reading you might take a glass of water out of the river and drink it with pleasure.

3675. Not near that lock on the Kennet?—Yes, I see it every day; it is very good water, and most enjoyable water; it is hard.

3676. Do you happen to remember Mr. Witherington's account, when he was at Sunning, of the state of things below Reading?—I saw it in this evidence; I believe that evidence was not given at Reading, but at Windsor; I think he said that they should want a cemetery for dead dogs.

3677. I see this, at page 142, Question 4252, "Do you suffer any annoyance from the sewage of Reading, as well as from dead dogs and cats that come down the river?—Sometimes it is very bad indeed, and the smell is dreadful. What distance are you below Reading?—Three and a-half miles. The effect of the sewage of Reading being turned into the river, is distinctly felt by you at a distance of three and a-half miles from Reading?—Yes, undoubtedly and annoyingly so, but it is not always the case." Then, he says, in answer to Question 4257, "Notwithstanding that considerable body of water, of great depth and width, you are still occasionally greatly annoyed by the sewage from Reading?—Yes; you would see it as you went up the river; banks are formed, and quite high ones, so that there is scarcely room in one place for a good-sized barge to get down in low water; if you put your punt-pole in you will see something like ink coming up, following the pole." We saw something like ink from another part of the river; I dare say you were in the room when one of those bottles was produced from Teddington Lock?—Yes, I saw that.

3678. That is not your experience?—I know that Mr. Witherington is of opinion that the sewage of Reading affects the water at Sunning; but I think, myself, that it does not arise from the sewage of Reading; I think that may contribute to it, but the accumulation of weeds and such like that was taken out of that cut is far more likely to produce that high-coloured water than the amount of overflow which goes in from our drains; the tan-yards come in about Reading.

3679. Besides the traffic, and besides the control of the sewage, is there any peculiar interest that the inhabitants of the town have in the river, except having it as clear and as nice as possible?—None, whatever; our interest is mainly centred in the navigation.

3680. At present, you have had direct representation; how often do you think the mayor, I will not say the recorder, of Reading has attended; my learned friend, the recorder (and I feel great pleasure in seeing him here), is an *ex officio* Commissioner, is he not?—Yes, he is amongst that number.

3681. And the mayor and the recorder are both members, I think?—Yes.

3682. And, I think, Mr. Rogers is a Commissioner also, if he likes to qualify?—I did qualify.

3683. Then we have got a Commissioner in the box; but I should like to know, you being interested in Reading, and having two members for Reading, the mayor and the recorder, how often have you attended the meeting of these Commissioners—I never attended but one, and that was to vote for my friend, Mr. Graham, as clerk to the Commissioners; it is because there is a body of Commissioners who do the work, some 10 or 12.

Cross-

Cross-examined by Mr. *Toulmin Smith.*

3684. You laid great stress on the Report of 1847, and your counsel did the same in asking some questions in your examination; I think you stated that the Board of Health urged very strongly some of its speculative theories on that occasion?—I think I said Mr. Edwin Chadwick; the Board of Health was not formed at that time; I believe the Reading inquiry had something to do with the formation of the General Board of Health.

Mr. *Macnamara* objected to Mr. Toulmin Smith cross-examining the Witness, upon the ground that he was now in the same interest as the Promoters, and that there could not be two cross-examinations of the Witness in the same interest.

After some discussion, Sir *George Bowyer* stated, that the Committee were of opinion that as the water companies have a distinct interest to protect, that if the learned counsel thought it necessary to cross-examine the Witness, he was entitled to do so.

3685. Mr. *Toulmin Smith.*] With respect to that inquiry in the year 1847, what I gathered from your remarks was that that was an attempt on the part of Mr. Chadwick and gentlemen who had certain speculative theories to force a certain scheme upon you?—I do not think I used the word force; they very strongly urged it, and Mr. Chadwick was at Reading a great deal at the time.

3686. Is it within your knowledge that the Preliminary Inquiries Act was only put in force when a Local Act was solicited by different towns or places?—My impression is that it referred to all Local Acts; it was the Act which was called "Lord Carlisle's Act."

3687. So far from Mr. Chadwick or anyone else trying to force any scheme upon you, was not this a Bill which you yourselves prepared?—That Bill was prepared by the town council, in actual conference with Mr. Chadwick, that is what I mean; Mr. Chadwick being well known to entertain certain views about drainage.

3688. That inquiry took place in consequence of the action of the town council of Reading, and not in consequence of the action of Mr. Chadwick?—You put two questions; I must answer one in the affirmative, and the other in the negative.

3689. Which do you answer in the affirmative?—The inquiry took place in consequence of the action of the town council of Reading; but when you ask me to say that it took place in consequence of the action of Mr. Chadwick, I cannot say so, because the action of the town council took place entirely irrespective of Mr. Chadwick.

3690. The town council introduced a Bill?—Yes.

3691. And the Commissioners on that occasion reported against that Bill?—They did.

3692. Therefore their report was not, as I certainly understood my learned friend to say, a report suggesting works to you; but it was a report showing that the Bill which the town council had prepared was not feasible?—But the Commissioners who reported were Mr. Rickards, who is now counsel to the Speaker, and Mr. Shaw, not Mr. Chadwick.

3693. But their report was that your Bill was not one which could be carried out beneficially to the public?—And more particularly that portion relating to the utilisation of sewage over land, and it was too speculative for the town council to undertake at the cost of the ratepayers.

3694. Are you aware that before a Select Committee of the House of Commons of 1850, the very case in that inquiry before Reading was brought forward to show what expenses those inquiries led to?—Yes; and I believe the Act was discontinued in consequence.

3695. You know that the Act was repealed next year?—It was discontinued in consequence of that; but I believe that we in Reading wisely spent the money.

3696. You spent 6,000 *l.*?—More than that; the inquiry lasted 21 days. What is now taking place would have been rendered useless if that money had not been spent.

3697. Since that, until the present time, you have been actively engaged in saving the ratepayers' money, I understand?—No; in answer to the question

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which Mr. Phinn put to me, I say that had we not spent our money in a local inquiry, the operation of this Bill would have been rendered useless.

3698. From that time up to the present year you have not considered any plans for drainage?—Yes, we have.

3699. I mean any plan with reference to the sewage of the town?—Certainly.

3700. Have you carried any of that plan out?—We have not carried out a general plan of drainage; we have carried out a large amount of surface drainage.

3701. That does not touch the sewage at all; I understood you to say that the whole of the sewage, that is, the foul drainage of Reading, goes into cesspools; and your theory is that it percolates through the earth, making Reading into a pleasant sponge?—I did not say that.

3702. Your drainage is not only the mere surface drainage, but it is cesspool drainage?—That is all we have done, surface drainage, allowing the cesspool system to go on.

Cross-examined by Mr. *Sargood.*

3703. Mr. Rogers, you propose two members being appointed on behalf of Reading instead of one; will you tell me why you ask for two?—I think the district of the Upper Navigation should be adequately represented; and my impression is, when Reading and Oxford appoint two that that would be about the proportion, giving the other districts corresponding numbers.

3704. I ask you why you do say two instead of one for Reading; on what ground?—I think, looking at the gross numbers which have to be brought in, assuming that you keep the 18 Thames Commissioners, that two would be the number which would fairly represent the interest of Reading in the Upper District.

3705. Do you found that on the existing population of Reading, or town property, or what?—All put together, and the importance of the place, and the various interests connected with it.

3706. Sir *G. Bowyer.*] Surely you cannot insist upon having two for Reading?—I do not use the words insist upon; what I want is, that the Upper Navigation, as a whole, shall have adequate representation.

3707. Surely one is quite enough?—If you give one to Windsor, one to Maidenhead, and so on.

3708. We have not decided anything of that sort?—I only wish to state what we desire.

3709. Mr. *Sargood.*] I want to get at what your ideas are founded upon for the protection of Reading; do not talk about the Upper Navigation; why do you ask for two members instead of one for Reading?—I do not separate Reading from the other portions of the Upper Thames.

3710. You are not representing anybody else but Reading, as I understand?—I think that the convenient way of introducing the representatives of the Upper Navigation will be by the local authorities of these different towns which are directly interested in the navigation.

3711. Unfortunately you do not answer my question. Taking Reading by itself, which you are here to protect, why do you think Reading entitled to two rather than one member?—The answer which I give to this is, that if I take Reading by itself, assuming you are going to keep the present number of Conservators, or you are going to add adequate representation for the Upper Navigation, that Reading, taken by itself, is entitled to that proportion.

3712. Then, you present the two members as part of some hypothetical plan which is only just shadowed forth?—Yes; if you are going to make the Board 18, and the Upper Navigation are to have nine, I shall be content with one for Reading; I must put it in that alternative way.

3713. Now, let me ask you this, who do you propose shall elect or nominate your one or two representatives?—I should propose that the corporation of Reading should do so.

3714. On what ground do you suggest that they are to be the electoral body?—Because they are the representative body elected by the inhabitants of Reading, and have the confidence of the people of Reading, and, more than that, are always people of respectability and character and position; I think if you had the representatives nominated by the corporation of Reading that you would have

have good members and efficient members, and members well acquainted with the wants of the navigation.

3715. If I follow you there, it is this, that the one or two gentlemen who might be sent to the Board by the Corporation would be good representatives of the whole of the inhabitants of Reading?—Yes; and forming part of the representation for the Upper District.

3716. That they would be good representatives of the inhabitants of Reading?—Yes.

3717. Now, will you tell me what subject would come before the Conservators on which your representatives would have the opportunity of voting in the interest of, and for the protection of Reading?—The whole matter of the tolls which you impose, and the mode of preserving the banks and the whole conduct of the navigation.

3718. We will take the amount of the tolls, that would be one subject on which you think your Reading members would vote?—I should imagine so.

3719. Who would be affected by the tolls; have you many barge owners, or persons of that sort?—Yes; all the traders of Reading; I should state that there are some very valuable wharves upon the River Kennet; the River Kennet, which goes into the heart of Reading, is covered with valuable wharves, and all the traders of Reading are deeply interested in the question.

3720. What are the Conservators to do for those traders and wharfingers; they are not going to ask them for any money?—I presume they would fix all the tolls of the navigation.

3721. Just mention what they will do?—They would have to keep the navigation in a proper state; it is very possible that the Conservators may keep the lower portion of the Thames in a state which may answer their purpose without injury to the Upper Navigation; I think the millowners will be able to see about that; but then I think that is another reason why the Upper Navigation should be well represented.

3722. You think you ought to send somebody to the Board to take care that these gentlemen do their duty impartially?—I do not impute want of impartiality to them; but we wish to be represented by persons whom we know.

3723. I want to see that there is some interest to represent?—I have told you that.

3724. I have not seen it yet?—I think, in the first place, we are interested in keeping the navigation of this district in a proper state; we are interested in maintaining the banks and towing paths, and all that sort of thing.

3725. Why should you impose on the Conservators what was not done before, keeping those things in proper order?—I have not said I do impose it.

Sir *G. Bowyer.*] No doubt Reading must have very important interests in the river, and those interests ought to be consulted.

Mr. *Sargood.*] There may be general interests without such individual or local interests as are involved in the idea of representation.

Witness.] I should like to give an instance to the Committee of what has taken place with the Thames Commissioners; it has been mentioned this very day, respecting the refuse which was taken out of that branch of the Kennet called the Cut; we sent to the Thames Commissioners over and over again to get that removed, but we ultimately removed it at our own expense; I tried to show the existence of that thing which the Commissioners ought to have removed themselves.

3726. Is not that because the Conservators have not got any money to do anything?—Yes; I do not make any complaint; I say we have a direct interest in having the river kept in a proper state at our own doors; we have been trying to get money by subscription to keep up the towing path on that part of the navigation.

3727. You are aware that this Bill proposes to create two systems to keep separate accounts of the Upper and Lower Navigation expenditure?—Yes.

3728. Bearing that in mind, why should you suggest it possible that the Conservators may be attending to the interests of the Lower Navigation to the detriment of the Upper, seeing that they only employ the funds of the Upper Navigation for the purposes of the Upper Navigation?—I have not said that the one will tend to the detriment of the other; when I am constituting a Board

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which is to perform certain duties, I do not start with the understanding that any of them will act unfairly, or anything of that sort.

3729. Supposing your proposition to give representation to all the towns on the banks of the river to be carried out, how many members do you suggest will be imported into the present Board by that means?—I think the Upper Navigation should be represented equally with the Lower.

3730. I am not asking you that question at all; my question was, supposing your proposition to give one or two members to the towns according to their population, how many members would be imported into the Board as a consequence of that; you are better acquainted with the Upper Districts than I am; I want to know how many fresh members you would bring in?—That question involves an answer to the preceding one; are you going to reduce the number of the existing members, or are you going to retain that number intact?

3731. Really, it is a very simple question; supposing each of the towns that you recommend to be represented sends one member, how many new members shall we have on our Board?—I think there are nine towns, and therefore you will have nine members.

3732. You recommend, at least under the present state of circumstances, the accession of eight or nine new members?—No; I recommend more than that, if you keep the present number of Conservators intact.

3733. What do you recommend; do you wish to have an equal number at the Board?—Yes.

3734. Do you wish to add eight or nine to the present 18?—Assuming you keep 18, but if you throw nine out then we shall be content with nine.

3735. Captain *Vivian.*]. Supposing the number of the present Conservators to be reduced, you propose to supplement that reduction by an equal number for the Upper District?—Yes; the numbers for the towns would vary according as the gross number varies.

Cross-examined by Mr. *Lopez* (who appeared in support of the Petition of the Mill-owners and Mill-occupiers of the Upper District, signed by "*H.* and *M. Allen,*" &c.)

3736. You have no doubt that the millowners of the Upper District have a very important interest in the navigation, and the whole of the matters connected with the river?—Yes, I think they have a very important interest indeed.

3737. You think that they ought to be represented?—Yes, I should recommend that the representation of the millers should be similar to that of the towns; I believe there are from 30 to 50 mills.

Re-examined by Mr. *Macnamara.*

3738. Now, let me ask you one or two questions in re-examination; you have been asked about what special interest such a town as Reading would have in this river; does it appear to you a reasonable thing that 30,000 people living on the banks of a river like the Thames should have some interest in that river?—Yes, I think it is self-evident.

3739. Are all the tradesmen of Reading interested in the question of tolls?—Yes, very largely; they would have to pay for the carriage of goods.

3740. Are the consumers of Reading also interested in the question of tolls?—Yes.

3741. Under the present Bill I believe the Board, however constituted, will exercise much larger powers over the Upper Navigation than have hitherto been exercised?—Yes, very much larger.

3742. Among other things, they have power to make bye-laws, and to regulate the amount of the tolls on the navigation of the river?—Yes, they have power to make bye-laws.

3743. Does it appear to you to be a reasonable thing, or according to the principles of representation, which are generally adopted, that 107 miles of the Upper Navigation should be handed over to a London Board, such as is at present constituted?—I think not; I think it would not be fair to the Upper Navigation to do more than that; I do not think it would be to the interest of the navigation itself; my belief is that the gentlemen living on the Upper

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Navigation would be valuable additions to the Board for the successful working of it.

3744. This does not involve a mere question of representation only, but also a question of voting on the part of those who are sent to the Board on the questions that come before them?—Yes.

3745. Is there a very strong feeling in these towns, so far as you are acquainted with it, in favour of this view that they should be fairly and fully represented?—Yes; I have communicated with a great many of the inhabitants of the towns, and they feel the same on that point.

3746. You have been asked about Reading; have they done anything with regard to drainage; did I understand you to say that only last year the Local Board laid out 500 *l.* on that subject?—Yes; with a view of carrying off the surface water.

3747. You have been asked by my learned friend, Mr. Phinn, what it was you proposed, whether you thought there should be one Board or two Boards; has it occurred to you that this might be done, that the present Conservancy Board might act for the Lower Navigation, but that, with a view to this Bill, or Act when it is passed, being put into operation or execution, they should have members from the Upper Navigation to act with them; that is, whenever the Upper Navigation was to be dealt with that the present Conservancy Board should have members of the Upper Navigation to Act with them?—That might be done, if it is thought necessary to separate the Upper from the Lower Navigation.

3748. Are the Local Board of Health of Reading desirous that the whole of the sewage and everything that can be in any way injurious to health or offensive should be diverted from the river?—Certainly.

3749. Is it their desire to act on that principle?—Yes; we act on that principle as far as we possibly can.

3750. Is what we require that the difficulties in the way of their carrying that out should be removed, and if they are put under compulsory powers that they should be fairly represented so as to have a voice in carrying it out?—Yes; what we require is that it should be done simultaneously with the prohibition that we should be placed under.

3751. Whether you call it overflow, or whatever it may be called, are they desirous of preventing anything that is noxious or injurious in any way from going into the Thames?—Quite so; what I wished to convey to the Committee was, that the power of carrying off the surface water of the river must remain permanently.

3752. Whatever may be your individual opinion on that let me ask you, as a body, are the Local Board of Health anxious to prevent the pollution of the Thames?—No doubt.

3753. I understood you to say that the overflow only occurs in times of storm and excessive rain?—Quite so, and a few exceptional cases; but it is illegal, there is a prohibition in the Public Health Act, that it shall not be lawful for any one to allow any noxious matter to go into the river.

3754. My learned friend read you two or three questions from page 124; I wish to refer you to 3647, where I see Mr. Harrison asked, "What where the instructions given you by the Local Board of Health, as to cleansing the river from this accumulation; they gave me instructions to commence at the Lock Pool and to go as far as Blake's Bridge." And then you said, "There was an order to cleanse it, not to throw it into the Thames;" that was not by any act or order of the Local Board of Health?—No.

3755. Now with regard to the small report that was asked for by my friend, do I understand you to say that has not been considered by the Local Board of Health?—No.

3756. It is under discussion now?—We have not met with regard to it yet, but we are going to meet very shortly; perhaps I may refer to this point; I do not think that our borrowing powers are sufficiently large for the execution of the important works that will be thrown upon us; if we are obliged to adopt this irrigation plan I have considerable doubt about it; that is one of the many reasons which induces me to think that we shall be placed in a false position in carrying out these works.

3757. Captain *Vivian.*] You would not have much difficulty in increasing your borrowing powers?—We should have to get an Act of Parliament.

3758. Sir *G. Bowyer.*] Why is it that the town of Reading does not at once

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make up its mind to follow the example of Oxford?—I consider we are doing something; I have had a report from Oxford this week, which I got from their surveyor, and I find that they are making inquiries in Reading about this irrigation system.

3759. Are you aware that Oxford is doing something more, and they are actually taking measures to carry it into effect?—I think not; I have been reading this Report, in which the surveyor finishes by saying he hopes the Board will entrust him with the preparation of a scheme, and the Report which he has prepared is stating his views of what the scheme shall be.

3760. They are taking measures to carry the scheme into effect in Oxford?—they are taking active measures, are they not?—The present state of things is exactly as I have told you.

3761. Mr. *Acland.*] Do I understand you to say, speaking now your own opinion, from your knowledge of the views of the Board, that they are not prepared to oppose the compulsory powers of this Bill, provided that reasonable powers are given to them for carrying out what is required of them and in sufficient time?—Certainly.

3762. Mr. *Peel.*] You object to the sewage clauses in consequence of your present limited powers?—Our present limited powers, I think, assuming what the Honourable Member has just said, that full powers are given to us, will require a little verbal alteration.

3763. Oxford is not objecting to this Bill?—Oxford has only been a Board during the last nine months, and has not had experience of the difficulties which we have, namely, the difficulties surrounding this question.

3764. Mr. *Reilly.*] This is quite a new point which Mr. Rogers has introduced about the borrowing powers; therefore, I must ask leave of the Committee to put some questions with reference to it. You know the 78th section of the Local Government Act, 1858?—Yes.

3765. Does not that section enable you, by means of the provisional order of the Secretary of State, to borrow at the rate of two years' assessable value of the property in the district?—Not absolutely; the power of borrowing is one year, and the consent cannot be given except for permanent works; that bears very much upon a remark which I made yesterday, that I do not believe that it is in the power of the Local Board to take land to construct works upon lease.

3766. Sir *G. Bowyer.*] The Oxford people think differently?—That is my impression; I believe that the Board of Health might be justified in laying out money in permanent works, to carry their sewage for a distance of four or five miles upon lands which they had only taken upon lease, which works at the end of the lease would be useless.

3767. Suppose it was a lease for 99 years?—That becomes a very different question.

3768. Mr. *Acland.*] Does not your answer also depend in some degree upon the expensiveness of those works?—Entirely.

3769. Might they not be works which a very enterprising tenant might think it worth his while to erect upon land taken on a lease of shorter duration?—We must raise the money; I do not know about that.

3770. Mr. *Reilly.*] Is not the state of the law this, that where a Local Board, exercising the borrowing powers of the Public Health Act or the Local Government Act, "has contributed to, purchased, or executed works of sewage and water supply, or proposes to contribute to, purchase, or execute such works, and where the cost of such works exceeds, or is estimated to exceed, one year's assessable value of the premises assessable within the district in respect of which such money may be borrowed, it shall be lawful for such Board to present a petition to one of Her Majesty's principal Secretaries of State, praying for powers to borrow or reborrow for such works, on mortgage of the rates leviable by them under the Public Health Act, 1848, and this Act, and any Local Act, an amount not exceeding two years' assessable value"?—I did not like to interrupt the learned Counsel, but I think he excluded the words "sewerage and water supply"; the learned Counsel in reading the clause, left out the words "sewerage and water supply," which form the essence of the section; the clause giving powers to the Home Secretary, refers to the Public Health Act, making it dependant, in fact, that you have executed, or propose to execute, not only works relating to sewage, but also works relating to the water supply.

3771. Sir *G. Bowyer.*] Sometimes the word "and" is taken as a disjunctive?

junctive?—But it is not so here; we have not got the water supply in Reading. Mr. *T. Rogers.*

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3772. Mr. *Reilly.*] Surely you cannot contend that the two are necessarily to be taken together?—No.

3773. Is it not the fact that that clause is always interpreted in the disjunctive, in practice?—No, I think not.

3774. Sir *G. Bowyer.*] It does not mean that the two are to be done together?—Oh dear, no.

3775. But that money may be borrowed for both?—Yes, I have had occasion to consider this clause over and over again; the original Act limits the power to one year's assessable value; there is no doubt under the statute that it does mean what those words say, that where you execute sewerage-and-water-supply works, your requirements will be extra, and therefore they increase the supply.

3776. Captain *Vivian.*] Has that interpretation ever been put upon it legally by any court?—I do not know.

3777. Sir *G. Bowyer.*] You cannot do one without the other?—We cannot get borrowing powers beyond one year, unless we show the Home Secretary that it is for the purpose of executing works relating to sewage and water supply.

3778. Mr. *Acland.*] Do you contend that one year's assessable value is enough?—I think we might buy land under the other clause, which says this, that such money shall not be borrowed except for permanent works; I am not at all satisfied that the power of irrigating land is an existing power to us; I am not at all satisfied that we have the power of applying money for such a purpose; I mention these things, because if this Bill is carried out those are all matters which the Committee will have to consider.

Mr. *Burke* then addressed the Committee on behalf of the Metropolitan Board of Works.

Sir *John Thwaites*, called; Examined by Mr. *Wilkinson.*

3779. You are, as we know, Chairman of the Metropolitan Board of Works?—Yes. Sir *J. Thwaites.*

3780. That Board was constituted first by the Act of 18 & 19 Vict. cap. 120, in the year 1855?—Yes.

3781. Among the powers committed to the Board on that occasion were provisions in respect of sewage and drainage of the metropolis?—Yes.

3782. A special clause in that Act, the 135th section, vests all the main sewers in the Metropolitan Board of Works, and also empowers them to make such sewers and works as they may think necessary for preventing all or any part of the sewage of the metropolis from flowing or passing into the River Thames in or near the metropolis?—Yes.

3783. Then I think by the 21 & 22 Vict. cap. 104, in the year 1858, further powers were given to you for the purification of the Thames and for the drainage of the metropolis?—Yes.

3784. The recitals of that Act state that it is necessary, with a view to the health of the metropolis, that works should be speedily undertaken and completed for the purification of the Thames, and the improvement of the drainage of the metropolis?—That is so.

3785. Afterwards the "Thames Embankment Act" was passed in three several years, 1862, 1863, and 1864?—Yes.

3786. Large works under that Act were completed by the Metropolitan Board of Works?—Yes.

3787. Have you, in pursuance of the powers vested in you under those Acts, made very large progress in completing the objects which you are required to fulfil?—We have.

3788. Will you explain to the Committee what you have done?—Many drainage works are perfectly complete, with the exception of the small branches now in course of construction along the Thames Embankment. All the other parts of the Main Drainage Works have been completed, and are in full operation.

3789. Is it not a notorious fact that a very great improvement has been occa-

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sioned with regard to the purity of the Thames water by the works constructed under the direction of your Board?—No doubt; fish are observed in the lower part of the stream, and in front of this House they have been caught in a very lively condition: I might refer to this fact, that the rate of mortality since the operation of our works has been reduced something like 10 per cent. in the metropolis during the summer. Notwithstanding the large abstraction of water by the water companies in the upper part of the stream, necessarily lessening the scour, and notwithstanding the temperature of last year, the mortality in the metropolis was reduced something like 10 per cent. I attribute that mainly to the interception and carrying off of the filth of the metropolis to a distance, and discharging it in a condition of the tide which would take it down some 12 miles before any portion of it could return.

3790. The limits of the jurisdiction of the Board are conterminous with those of the Registrar General, are they not?—They are the well-known metropolitan area from Erith Marshes up to Mortlake.

3791. Now, the number of the members of the Board is 45, I think?—Yes, and myself.

3792. Each elected for three years, and from time to time the vacancy is supplied?—One-third go out every year.

3793. Have you, from your experience as Chairman of that Board, found any inconvenience to result from the number of the members being so large as 45?—No.

3794. On the contrary, do you consider it an advantage to have a Board so powerful in numbers with reference to dividing your duties and constituting committees?—I do not think we should be able to work with a less number, certainly.

3795. You are aware that the lower part of the river is under the control, at present, of the Board of Conservators?—Yes.

3796. The nature of that Board has sufficiently been brought under the notice of the Committee to avoid my asking you any question about that, except that you are aware that by the Act of 1864 six nominees of representative bodies were added to the original number of the Conservators?—Yes.

3797. Are you aware that in the number so added the representatives of the barge owners and the steamboats were included?—And the wharfingers.

3798. First, with reference to the wharfingers; considering the enormous work of the Thames Embankment, may not the Metropolitan Board of Works consider themselves fairly entitled, as wharfingers, to an interest in the conservancy of the river?—When that Bill was before Parliament our attention was called to the condition of the representation proposed to be given; and it did appear surprising to us that all interests should be represented, save and except that body which represents 3,000,000 of inhabitants. You give representation to wharfingers, to steamboat companies, to the very parties who ought to be put under control instead of being made the controlling parties, and yet you will deny to the Metropolitan Board of Works, who represent 3,000,000 of inhabitants, any controlling power over that river in which they are so deeply interested; we felt this in the case of the wharfingers, because we were constantly brought in contact with the existing authorities with reference to matters connected with the foreshore of the river; the extension of our outlets down to low water, and matters connected with the drainage of the metropolis and the storm overflows connected with our main drainage system, pointed to the desirability of our Board having some representative at the Conservancy Board in order that those matters might be arranged in an amicable and proper spirit, instead of getting into conflict at times upon matters which would otherwise have been arranged without any difference of opinion had the Metropolitan Board of Works some representation on the Conservancy Board; independently of that we felt, and do strongly feel, that as representing 3,000,000 of inhabitants we have the right to ask to be represented; having regard to the fact that a large supply of water for domestic purposes is taken from the river and consumed by the inhabitants, it must be a question of importance to us, who represent a part of that river; on that ground we urged the desirability of some link between our Board and the Conservancy, in order that the purity of the river might be maintained; I had the honour of addressing a communication to the late Lord Palmerston on this subject some three years ago, and pointed out to his Lordship that while the metropolis had been called upon to expend something like 4,000,000 *l.* of money for the purpose of purifying

purifying the river, and improving the sanitary condition of the metropolis, that the upper towns were permitted to discharge their sewage and filth into the river, and thus to pollute that river which we had endeavoured at so great a cost to cleanse; and I called his Lordship's attention to the necessity of some steps being taken for the purpose of preventing the pollution of the river in the upper stream; it was then under consideration to drain the town of Kingston; their main outlets were pointed to the river; we had a right therefore to conclude that they intended to discharge the sewage of that large town into the river. Richmond and other towns having no other outlet would probably follow the same example, and hence the anxiety of the Board that some steps should be taken for the purpose of preventing that injury; nothing appeared to us more natural than that the Board, representing the metropolis, should have some representative, especially having regard to the fact that the steamboat companies and wharfingers were represented on this Conservancy Board; we have nothing to serve except the public interest; the purification of the River Thames is a matter in which we necessarily feel a deep interest; on behalf of the Board, and I may say on behalf of the 3,000,000 of ratepayers of the metropolis, I do urge the claim of the Board to have some representation upon the Thames Conservancy Board.

3799. You mentioned a letter addressed by you to Lord Palmerston; I have a copy of that letter, and it seems to me of such importance that I will place it in your hands, in order that it may be inserted in the Minutes?—That letter was referred to Sir George Grey, and ultimately to a Committee of this House which sat at the time; the result was the appointment of a Commission, which Commission has reported.

3800. What Commission was that?—The Commission as to the purification of rivers.

[*The Witness delivered in the letter, which is as follows:*]

POLLUTION OF THE THAMES.

My Lord, Spring Gardens, 12 May 1864.

MY colleagues have requested me to submit for your consideration the urgent necessity for legislative action, in order to prevent the rapidly increasing pollution of the River Thames by the several towns and populous places on its banks, above the Metropolis.

In making the limits of the jurisdiction of the Metropolitan Board of Works, conterminous with those of the Registrar General, the legislature were guided by considerations irrespective of drainage areas or water shed lines, and consequently deprived the Board of the power of freeing the Thames from pollution, by the several sewers and streams discharging into the Thames, but having their course beyond their jurisdiction. So long as the system of house drainage was unknown, and the population beyond the Metropolitan area few and sparse, no inconvenience was experienced from this source; but the operation of the Health of Towns and Local Government Acts, and the increase in the riverain population, compels attention to their requirements.

In carrying into effect the provisions of the Metropolis Local Management Act, 1855, and the Main Drainage Acts, 1858 and 1862, the Board have already expended or undertaken works involving the expenditure of nearly four and a quarter millions, and when these works are completed, no sewage matter whatever will be discharged or suffered to flow into the Thames, within the limits of the Metropolis; to effect which provision has to be made for the drainage of 117 square miles, and for a population of upwards of three millions. But it will be obvious to your Lordship that these figures by no means represent all the sources contributing to the pollution of the Thames, whose *supra* Metropolitan basin comprises greater or lesser portions of 12 counties, and upwards of 50 towns and populous places, with a population of more than half a million, the whole of whose drainage is discharged, at present, into the stream above the tidal influence, and consequently in a more or less concentrated form. Doubtless at the present time the sewage of Hampton, Chertsey, Staines, Eton, Windsor, Maidenhead, Marlow, Henley, Reading, Wallingford, Abingdon, and Oxford do not materially affect the Metropolis, but it will be well to remember that, in 1852, by the Metropolis Water Act, the Metropolitan Water Companies were prohibited from taking their supply below Teddington Lock, and they consequently made arrangements for taking it from the Thames at Thames Ditton and Hampton, respectively, and that with that supply the drainage of the towns above enumerated is being distributed to the consumers, a source of pollution which will become more and more serious as these towns avail themselves of the benefits of an improved system of house drainage.

But if their sewage is at present sufficiently diluted to become innocuous before reaching London, such cannot be said to be the case with that of Kingston, Teddington, Twickenham, Richmond, Isleworth, Brentford, Chiswick, Croydon, and many others whose contribution to the cloacal stream will become both absolutely, as well as relatively

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tively greater, year by year, and as the main drainage approaches completion. To provide a complete system of interception for the whole of the towns and villages at present discharging into the basin of the Thames, would obviously be far too costly a burden to impose upon them, whilst it would be clearly impossible to shift their duties upon other shoulders. But my colleagues believe that the resources of modern science present other solutions for such a problem than that of interception.

Various suggestions have recently been laid before them, and are still under their consideration, for the application of the metropolitan sewage to the purposes of agriculture. The peculiar conditions of the metropolis, and the magnitude of the questions involved, present obstacles difficult to be overcome. These conditions do not apply to the places above-named, many of which are very favourably situated for carrying out the suggestions referred to. I would therefore submit to your Lordship that the time has now arrived for the Legislative prohibition of the discharge of sewage into the Thames, by any town or village above London; they will then be compelled to provide some other means for getting rid of their drainage. In urging the justice of such a prohibition, I may observe that before the rise of modern sanitary legislation, the pollution of streams was an offence involving penal consequences, and the discharge of soil or filth from house drainage, either directly into the River Thames, or by means of any of its tributaries, was prohibited by the corporate authorities, and by the several Commissioners of Sewers. The improvements in our domestic arrangements, and the increase in the supply of water, compelled other means of outfall than those afforded by cesspools, and now a *quasi* legislative sanction has been given to the discharge of all the excreta of our population into our streams and rivers. The evils from that sanction threaten to become as great as those which it is its object to remove. We submit, therefore, that Parliament should exercise its authority to provide a remedy. We urge our claim to relief, by way of compulsory legislation, the more strongly in that we have been compelled by Parliament to expend four and a quarter millions in doing that which we now ask that our neighbours should be called on to do.

I have, &c.
(signed) *J. Thwaites,*
Chairman of the Metropolitan Board of Works.

Right Honourable Viscount Palmerston, K.G., M.P.
&c. &c. &c.

3801. Just referring to what you have stated as to the necessity of some power of interfering with the body of Conservators, you mentioned, I think, but I am not sure whether I caught you correctly, the difficulty which you have experienced with regard to the outlets of the sewer; I did not catch that you mentioned also the difficulties arising, in the formation of the Thames Embankment, from the arrangement for the piers, stages, and steamboats; was that another difficulty which led to a sort of conflict with the Conservators?—No doubt.

3802. Was there not also some question between you with regard to the dredging necessary for the filling up and ballasting of the Embankment, with reference to which intercommunication between the two bodies might have avoided great inconvenience and expense?—It undoubtedly would have avoided a great deal of the misunderstanding that occurred.

3803. Now, an objection seems to be suggested on the other side that, inasmuch as this Bill relates simply to the purification and management of the upper part of the Thames, and does not include the lower district, that therefore you have no right, on the part of the Metropolitan Board of Works, to ask to be incorporated in this Board of Conservators?—I understand it is to be managed by one Board representing not only the upper, but the lower part.

3804. The suggestion is to unite the management in a managing Board, not being a freshly constituted Board representing the upper part exclusively, but simply adding to the present Conservancy Board; do you consider you have a right, on the ordinary principles of representation, to be represented at that Board?—I think we have a right to ask for representation, first, so far as our jurisdiction is concerned—namely, up to Mortlake and down to Barking Creek; and I might venture to argue that we have a right to representation as to the control of the upper part of the stream in order to secure the purity of the river, to prevent the pollution of that water which is used for domestic purposes by the inhabitants of the metropolis.

3805. Of course I need hardly ask you whether the Board can have any other interest than that of the public in the matter; there can be no direct interest?—Not at all; we have no desire for additional work; it is simply a matter of duty.

3806. But

3806. But, contrasting the claims of the Metropolitan Board of Works with those of the barge owners and steamboat proprietors, are you of opinion that the Metropolitan Board of Works has a much greater right to be represented at the Conservancy Board, even supposing that could only be acquired by the exclusion of the barge owners and steamboat proprietors?—Undoubtedly I think it was a mistake in the original Bill that the barge owners, steamboat companies, and wharfingers, the very persons to be controlled, should have been made the controlling parties.

3807. I think you also, before the present Bill was introduced, addressed a letter, did you not, to the President of the Board of Trade upon the subject?—Yes.

3808. On the 24th of March you wrote a letter to the Right Honourable the President of the Board of Trade, stating your views with respect to this present Bill?—Yes.

3809. I merely refer to that in order to show that you have taken every step to bring this matter before the Committee; I presume from the answers already given that any improper management or want of proper control of the works relative to the purification of the upper part of the river, would prejudice *pro tanto*, if not neutralize the value of what you are doing with regard to the river?—No doubt.

3810. You think it important that there should be unity of management throughout the river, from its source to its mouth?—Yes.

3811. You are aware that it is proposed by the Promoters of this Bill to add to the existing body of Conservators?—Yes.

3812. Does this appear to you therefore to be a proper opportunity for reconsidering the whole question of constituting such a body as would command the support of the whole of the interests connected with the river?—I think so.

3813. You are aware that during the progress of this inquiry before the Committee the water companies have undertaken to pay 5,000 *l.* a year towards the expenses of the management of the river those expenses being paid by the Conservators only; does it appear to you that that again would be an argument against maintaining intact and unaltered the present body of Conservators?—That is an argument in favour of the position I take, that we, as the representatives of the ratepayers, should have some control over the river, because, if the water companies feel a sufficient interest in it to contribute 5,000 *l.* a year to the expense of this Commission for the purpose, I apprehend of preventing pollution, that clearly sustains the view that I have taken, that we ought to be represented.

3814. But, independently, as it were of the protective necessity for the addition of a member of the Board of Works to this Commission, does it appear to you that there would be the greatest advantage to the public in the concurrent action of a member of the Board of Works with the Conservators as they exist?—I think it would tend to harmony of working and unity of management.

3815. I need hardly ask you whether there is not, independently of yourself, among the members of the Board gentlemen whose actual experience would be extremely valuable on a commission of this character?—No doubt; there would be no difficulty in selecting suitable men to represent the Board.

Cross-examined by Mr. *Phinn.*

3816. You are aware that the question of the constitution of the Board was before Parliament in 1857, and again in 1864?—Yes.

3817. In 1864 there was a proposal to enlarge the Board, which was carried into effect by introducing, I think, six elected members?—Yes.

3818. Did the Metropolitan Board of Works then prefer any claim to be represented?—We did, and were defeated.

3819. So that there is a Parliamentary adjudication on the subject, at any rate?—No doubt, so far as a Committee of the House is concerned.

3820. You made a statement which I think you would like to correct; you said by your aid the mortality had diminished 10 per cent.; you mean 10 per cent. per 1,000, do you not?—I meant 10 per cent. of the mortality, not 10 per cent. of the population.

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3821. The mortality was never above 22 per 1,000?—Supposing it was 22, it was reduced to 20.

3822. That is what you meant?—I could not mean anything else.

3823. With reference to the Thames Embankment, you have certain duties, no doubt, and you are brought in conflict with this Board, but have you not three members named by the City on the Board?—On our Board.

3824. Yes?—We have three representatives of the City of London.

3825. And the City has a certain number of representatives on the Conservancy Board?—Yes, but we know nothing of that.

3826. You know the Act of Parliament surely?—I do.

3827. You know the fact?—I know the fact; the City is treated as a district.

3828. Therefore you have a medium of communication although no direct actual representation?—We have no medium of communication.

3829. All your operations are below the source of any water supply to the metropolis, are they not?—Yes.

3830. At the point where your jurisdiction begins no water is taken from the Thames for the supply of any town?—No; but the law of gravitation would bring it there.

3831. But I mean that there is no water taken and distributed as at Greenwich or anywhere else?—Not for domestic purposes.

3832. Are you aware that the Conservators resist the introduction of a greater number into their Board?—They have always done so.

3833. Sir *G. Bowyer.*] I should like to ask you whether you do not think that the interests which are represented by the Board of Works are also virtually represented by the Board of Conservators?—How?

3834. The Board of Conservators, being composed of persons belonging to the metropolitan district, have the same interests as the Metropolitan Board of Works have, have they not?—That is just the point on which we differ from the statement the learned Counsel has made, that as we happen to have three representatives at our Board representing the area of the City as a district of the metropolis, and because the City sends representatives to the Conservancy Board, that, therefore, we have a direct communication and link between our Board and the Conservancy Board; nothing can be more fallacious; that is not so; we have no control whatever with reference to the Conservancy Board; what we complain of the Conservancy Board is, that it does not represent the metropolis, but it represents the steamboat companies, it represents the wharfingers, it represents the Corporation of London, but it does not represent the metropolis; we represent 3,000,000 of inhabitants; the population of the City of London may be something like 200,000 or 300,000, as the case may be, and they represent nothing beyond the area of the Corporation; our case, therefore, is clear, that if the metropolis is entitled to anything it is entitled to some representation on that Board, not filtered through the Corporation, who represent, and specially represent, but through its own body, and not through the Metropolitan Board of Works, that area; the whole of the area of the one is one square mile, and the other area is 117 square miles.

3835. But do you not think that the interests of the Board of Conservators and the Metropolitan Board of Works are the same, that they have the same objects in view, and the same interests?—No, they have not the same objects in view.

3836. I mean with reference to the river, of course?—I have no doubt, as far as the gentlemen connected with the Thames Conservancy are concerned, that they are acting conscientiously in the discharge of their duty, and that they do their best to promote the interests of the river, but we are contending that if there is to be a representative body, we, being the body representing the metropolis, are the body through whom that representation should be maintained.

3837. Has there been any discord, or antagonism, or difference between the Board of Conservators and the Board of Works?—There has.

3838. Can you state how that arose?—In the first place, there has been a considerable misunderstanding in respect of the filling in, that is to say, the material dredged from the river and placed behind our Embankment; the difference arose on the construction of the Act of Parliament as to whether it was obligatory on the part of the Board of Works to take all the material or any from the Conservancy Board; the Conservancy Board contended that we were bound

bound to take all; in the second place, a difference of opinion arose as to the cost of raising; the statute required that they should hand over the material to us at the cost of raising, barging, and delivering; we had the figures given to us, and the cost of raising was not that which the Thames Conservancy Board had placed in their communication with us; we also contended that it was the duty of the Thames Conservancy Board to dredge, and therefore the cost was the simple cost of raising, and not of dredging; that led to a considerable amount of correspondence and difficulty, which I believe would have been avoided had the Board of Works some representation at the Conservancy Board, by means of which matters might have been mutually explained; but when these things are left to be settled by ordinary correspondence between two public Boards, they are not so easily explained, and I consider that harmony and unity of working are interrupted by the absence of some representative.

Cross-examined by Mr. *Sargood.*

3839. Will you be kind enough to let me see if I understand your objection to the last act of the Conservators, by which six additional members were added; there are two to be elected by the owners of shipping, one by the owners of steamers, two by the owners of lighters and steam-tugs, and one by the occupiers of docks, legal quays, and sufferance wharves; did I understand you to say that, because they were all partially subject to the control of the Conservators, that therefore they ought not to have a voice in the election of the Conservators?—No; I think all the ratepayers of the metropolis should have some voice in the election of those who are to represent them.

3840. I want to ascertain what is the objection which you allege to these six representatives; you were good enough to give us your idea, but I am not quite sure that I appreciate it?—My objection was one of contrast; I complained that the Board that I represent was not represented there; that objection was increased by the fact that parties were elected to that Board who ought to be controlled, and who should not be made the controlling parties.

3841. Do you think that in principle objectionable?—I do.

3842. You think that those who should be controlled should have a voice in the election of those who are to control them?—No, I think that if the police of the Thames, if I may so describe it, is to be in the hands of a representative body, that the steamboats, wharfingers, and other parties who are likely to encroach on the public rights, and create a public inconvenience, are not the parties to be charged with the control, but that they themselves, in point of fact, ought to be controlled.

3843. Then, I think I do appreciate it; you say that those who are to be controlled ought not to be the electors of the controlling power?—No, I have not said so; what I said was this, I do not object to their having a voice in electing the persons who should form that Board, but I object to their being the elected.

3844. The Act of Parliament makes the owners of steamers, and so on, the electors, so that they may have some who represent them?—They send one of their own body.

3845. That you think objectionable?—Certainly.

3846. Then do I understand you, that if the shipowners as a body are to be represented, you approve of their being the electoral body?—I have no objection to the shipowners, as a part of the ratepayers of the metropolis, having a voice in the election of an efficient representative body, but I object to this, that they should have the exclusive right of nominating one of their own body who should act as one of the controllers of that body.

3847. I want to follow out the idea; if the shipowners are to have the power of election, I presume it is that the shipowners may be represented?—Not at all.

3848. Then in giving a particular class of people the right of electing, you do not think it is with the intention of protecting the interests of that class of people?—I say with great humility, that although it may be consistent with the statute, and might be the intention of Parliament, and it is not my place to dispute the wisdom of Parliament, I do not sympathise with the principle, because I think if there is a liability to a nuisance, the parties most likely to commit that nuisance

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are not the parties who ought to form part of the Board whose duty it is to control and suppress the nuisance.

3849. Then, supposing it is the intention of Parliament, by this which is called the representative clause, to allow the parties here named to protect their own interests by sending their own representatives, that is a mode which you do not sympathise with; are not the Board of Works to some extent a power controlled by the Conservators in their present form?—No doubt, so far as the jurisdiction of the Conservators is concerned, that cannot be interfered with without their consent.

3850. Then, you would hardly arm the Board of Works by sending one of their own number as their nominee to protect their individual interests, after what you have told me of their objection to the principle of this clause?—I have no objection whatever that the metropolis at large should elect; I simply spoke of our Board as representing the ratepayers.

3851. I am not asking you so much as to what you have no objection to in principle, but do you advocate that you should send one or more of the members of your own Board?—The purpose is to represent the ratepayers of the metropolis, who are not represented.

3852. And not to represent the Metropolitan Board of Works and its own particular jurisdiction or interests, but merely the ratepayers?—Undoubtedly.

3853. The Board of Works itself being constituted, I think by delegation from vestries if I remember right, they representing the ratepayers, you consider you would represent the 3,000,000 of ratepayers by having one or two of your members put on the Conservancy Board?—I think that would be a representation for the metropolis.

3854. Have you any stronger reason for desiring that representation than the fact of the 3,000,000 being the persons who drink the water, and who would like it to be pure?—I think the general management of the river is a consideration with us.

3855. You think the whole of the 3,000,000 are interested sufficiently in that, to be represented at this Board?—Undoubtedly.

3856. You mentioned the question of drinking pure water as one of paramount importance?—I mentioned that as a reason.

3857. Is it not within your knowledge that one-half of the water consumed in London does not come from the Thames at all, but from other sources?—No doubt.

3858. You have never thought it right that a member of your Board should be a member of the River Lea Trust, for instance?—We are now speaking of the public river with regard to the purity or impurity of the water.

3859. I am alluding to the purity of the River Lea, the water of which is consumed by half of the 3,000,000, which is the population of London?—That is a river over which we have no authority.

3860. You have no control over the Thames?—We have spent four millions of money for the purification of the river.

3861. But the primary object was the health of the town, was it not?—No doubt.

3862. The effect would be that if you took the sewage out of the river, the water would be all the purer?—No doubt.

3863. Now let me ask you with regard to the progress of your works, what is there with regard to the construction of sewers with reference to which you and the Conservators can now by any possibility come into conflict?—What I have named, the storm outlets passing into the river.

3864. Those, I think, are merely the means of conveying the sewage, to be used on express and very exceptional occasions?—Yes, as to storm waters principally.

3865. What difficulty would arise between you and the Conservators on those points; you must take your pipes down to low water; the Conservators insist on that?—No, we should insist on it; we should not touch the river over which the Conservators have jurisdiction without their consent, because if we did we could not proceed in all probability.

3866. Are you afraid that the Conservators would make an unreasonable objection to your doing so?—I have no objection personally to the Conservancy Board; I have mentioned two cases in which disagreement or misunderstanding had

had arisen, which I believe would have been avoided had the Metropolitan Board had its proper representation.

3867. Supposing you had two or three members on the Board of Conservators, how could that have tended to avoid a difference of opinion between the Conservators on the one side, and the Metropolitan Board of Works on the other?—Simply because matters could have been mutually explained, and the mischief which has arisen prevented if there had been a means of inter-communication afforded between the two bodies.

3868. You do not mean to suggest that the Conservators would not even listen to a delegate, *vivâ voce*, if you wished to send one there?—Not at all.

3869. There would be no difficulty in the interchange of civilities without a formal notice?—No doubt; still it would be more effectual could we have a representative there.

3870. All your sewage works are done, with the exception of the storm outlets, which are to exist as permanent works, and for permanent use?—As part of the low level.

3871. Now with regard to the Embankment, what is there between you and Conservators that raises any difficulty as to that?—There are matters connected with the line, and also as to the filling in and dredging from the river.

3872. The Conservators have thought that you ought to take the dredging from the river for the purpose of making your embankment?—Yes.

3873. You do not quite agree with them?—No.

3874. They have an interest in making you take it, and you have an interest the other way?—The material they proposed to give us would not suit.

3875. Sir *G. Bowyer.*] They oblige you to take some stuff, which was very unfit for the purpose?—Yes.

3876. Mr. *Sargood.*] Do you not think that your principle that the parties who are to be controlled are not exactly the parties to be the controlling power, would come in here as an objection to the Metropolitan Board of Works sending representatives to the Conservancy Board?—In what respect?

3877. Because it would be doing that which would be repugnant to the principle, that is, that those who are to be governed with regard to not committing a nuisance, are to elect representatives to sit at a Board, whose duty it is to prevent that nuisance being committed?—There is no comparison between the steamboat companies and the barge owners who may interrupt the traffic, and a public body; I cannot understand the comparison.

3878. That is the reason I am giving why your principle is not practical?—The steamboat companies, barge owners, and other parties of that kind, have a direct commercial interest.

3879. In what way?—They might overcrowd the traffic, inconvenience the traffic, and interfere with the free navigation for commercial reasons, which commercial reasons cannot exist with regard to our Board.

3880. You apply it only to commercial principles; when your embankment works are finished, all the works remain the property of the Metropolitan Board of Works?—Yes.

3881. Are they to any extent to be under the control of the Conservators when they are completed, and pass out of your hands as public works?—I do not apprehend that they will pass out of our hands; I apprehend that we shall have to sustain them.

3882. And continue to have the control of them for ever?—That is my impression, but I am only speaking off-hand.

3883. You think that the Conservators have no interest in those works under their constitution?—Undoubtedly they have an interest in anything that affects the Thames.

3884. I mean with regard to their jurisdiction?—I do not know; I am not able to speak clearly on that point, because I have not referred to the section.

3885. Mr. *Acland.*] Your view is this, that you think the regulation of the Thames is so very important that any public body having parallel duties to discharge should have the power of sitting at the Conservancy Board, and knowing all that goes on there with reference to the river?—That is clearly our view.

3886. That draws a distinction, in your opinion, between them and private persons who have no such public duty?—Clearly.

3887. Sir *G. Bowyer.*] Your object, I suppose, would be fulfilled by your having

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having one representative at the Conservancy Board?—Our Board are not desirous of having a large number of representatives, but what they desire is that there should be some connecting link.

3888. Mr. *Sargood.*] You have spoken with regard to the lower part of the river: is it within your knowledge that the Conservators do look after nuisances and take active measures in cleansing the river?—I believe they do.

3889. Do you know that they actually pay representatives for apprehending persons who are found guilty of polluting the river in any way?—I have no doubt they do.

Mr. *Neate*] What part of the river are you now talking of?

Mr. *Sargood.*] From Staines downwards.

Mr. *Neate.*] From Staines below London?

Mr. *Sargood.*] Yes.

Captain *Vivian.*] Do the Thames Conservancy interfere for preserving the purity of the river in London itself?

Mr. *Sargood.*] They do.

Mr. *Neate.*] Sir John Thwaites spoke of the Board of Works having a jurisdiction up to Putney.

The *Witness.*] With reference to sewage matter, refuse from manufactories may be discharged; but I believe it has been the practice of the Conservancy Board to watch carefully to prevent sewage.

3890. Mr. *Neate.*] What I want to know is, supposing that the Board of Works neglect to exercise the power they have of stopping the sewage, do they then become liable themselves to the jurisdiction of the Thames Conservancy?—No.

3891. If the Board of Works discharge a sewer into the Thames, have the Thames Conservators the power of controlling them?—I think not.

3892. Sir *G. Bowyer.*] Do you utilise any portion of your sewage?—We have made arrangements with regard to the northern sewage, that the whole of it shall be taken down to Maplin Sands, and the works are in course of construction for that purpose for taking it from the outlet, and we hope to let the southern sewage also.

3893. You apprehend that that will be successful?—I hope so.

3894. Mr. *Sargood.*] I will just conclude with asking you one question. Having failed to obtain a seat on the Board in 1864, is there anything of novelty either in your experience or in your operations at the present moment beyond that which existed in 1864, when you applied for a seat on the Conservancy Board?—In 1864 there was nothing of novelty which caused us to press for representation.

3895. You have not apprehended my question; I ask you, whatever argument you then propounded, is there anything of novelty beyond what you urged in 1864?—I do not know that there is anything of novelty beyond that which existed in 1864, except that our subsequent experience has confirmed the view we then took, and has more than confirmed the mischief which we apprehended.

3896. So that, in point of fact, you would simply re-urge that which you think ought not to have occurred on the previous occasion?—With greater earnestness, having regard to our subsequent experience.

3897. Mr. *Acland.*] Do you not think that the scheme which is before this Committee has a very much wider view than all previous dealings with river business, and, therefore, it does in point of fact, open views which were not before Parliament in 1864?—Undoubtedly; the tendency of legislation and the requirement of the river is one which will open a very much larger field than that which existed in 1864.

3898. In fact, it is one on which, if legislation can take place successfully it ought to be applied beyond the limits of this Bill?—Just so.

3899. What is your view as to the proportion and relation of the other towns besides London to the general control of the River Thames? do you think it desirable that they should have a share in the control of the river, or do you think

think that there are others who would require to be controlled, and therefore who would have a claim for representation?—I think any town on the river that is not polluting the river by its own voluntary act, and the pollution of the river might be an inconvenience, might have the right to representation.

3900. Do you mean that their right to be heard at the Board should be conditional on the degree with which they have carried out the system of non-pollution?—I am rather showing the position of parties with clean hands upon the river.

3901. You mean that they should wash their hands first?—I mean that they are not sinners against the river; the pollution of the river is a matter of great importance to us in a sanitary point of view; we ought to have some operation in order to preserve the purity of the river.

3902. Do not all these towns, for instance, unless they comply with very stringent regulations, have a tendency to pollute the river?—No doubt; and that tendency is increasing, because water-closets, instead of being the exception, will now become the rule; formerly there were cesspools, but now that the advantages of water-closets are becoming known, where there is a supply of water, they must have an outlet; and the river, as being the lowest point, will be the natural outlet, having a tendency to pollute the streams which are the sources of supply to the river; legislation must very shortly take place with regard to that.

3903. You are aware of the complicated interests which this Bill proposes to deal with, and you are also aware of the feelings of the ratepayers of London upon it; is it your opinion, as a member of the Metropolitan Board of Works, that it is desirable or undesirable that the various interests, both urban, rural, and commercial, of the Upper Thames should be represented at this Board?—I think there should be some kind of representation; I do not understand why the Corporation should have six or seven representatives, and the metropolis should be excluded, or other towns which are deeply interested in the purification of the river.

3904. Can you give us any opinion, as a matter of experience, of your general knowledge of the working of things in the metropolis; how does the Conservancy Board work, as a matter of fact; do you imagine that these smaller commercial interests work advantageously, as a matter of fact, at the Board, apart from your general theory?—Do you mean under the present law?

3905. Yes?—That I am not able to say.

3906. You have had no reason to think that the duties of the Board are not efficiently discharged?—No, I should be very sorry to say so; I speak on general belief.

3907. Have you any reason to think that private interests are too much considered?—I think they are; I think that is the fault of the present Act.

3908. I am asking you, not as to any theory you may have, but speaking from your experience?—I do not know from experience.

3909. Do you know whether the Board of Conservators are paid for their attendance?—I do not.

3910. Is there any payment to the members of the Metropolitan Board of Works?—None whatever.

3911. Their attendance is entirely voluntary?—Entirely.

3912. Sir *M. H. Beach.*] You spoke of towns on the river being sinners against the river; do you not consider that the Metropolitan Board of Works may also be described as sinners against the river to some extent?—We have given good and earnest proof of our repentance during the last four years, by spending 4,000,000 *l.* of money to purify it.

3913. At the present moment you carry all the southern sewage into the river at Plumstead?—And the northern sewage also; we discharge it at high water; it is taken 12 miles below the point of discharge, where it is impossible for it to return.

3914. It all passes Gravesend?—Yes.

3915. Sir *G. Bowyer.*] In fact it is part of the sea there?—Yes; the section area of the river at that point is very great.

3916. Do you not consider that it would be advisable, if possible, that the whole of the metropolitan sewage should be utilised, rather than that any of it should be sent into the river at all?—That is not only an abstract opinion, but it is the earnest desire of our Board; we have entered into an arrangement with

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the company for the northern sewage, and we hope also soon to make arrangements with the south.

3917. You are attempting to apply the same principle to London which you wish to see applied to the country?——

3918. Mr. *Acland.*] Have you been able to form any opinion, from your experience of these works, whether the noxious and fluid qualities of the sewage are neutralised by irrigation?—That will depend a great deal upon the condition of things, such as the temperature, and so on.

3919. Is there in any case clear proof that the noxious quality of sewage is dispersed by a certain amount of contact with the surface of the earth?—No doubt the earth would be the best deodoriser, with reference to its application to grass land.

3920. Have you investigated that yourself, in your capacity as chairman, and informed your own mind upon that point?—You scarcely can have sewage near to the dwellings of the inhabitants of towns.

3921. Sir *G. Bowyer.*] What is the result of spreading sewage on the land; was the result that the liquid proceeding from those fields was not noxious as sewage?—It will depend a great deal upon the state of the temperature at the time, and it will also depend upon the amount of dressing, whether you give a very large amount of dressing or a small amount of dressing.

3922. It was disinfected at Carlisle, was it not?—Yes.

3923. Mr. *Acland.*] I am not speaking of the effect upon the atmosphere, or of whether it is likely to spread disease in the immediate neighbourhood, but whether the water, after being taken out of the sewer passed over fields, is, when returned to the river, deprived of its noxious qualities?—You may have a very striking illustration of that at Croydon; after passing over two meadows, the water passes off perfectly pure, at all events perfectly clear; but, whether there is anything in solution, I am not able to say.

3924. Sir *G. Bowyer.*] It has no noxious qualities?—Not the slightest; we tested the water without any fear; we could not detect any unpleasant test; of course there may be something in solution.

3925. Mr. *Acland.*] My question is this, whether we may consider that medical and chemical science or experience have so fully established that the noxious qualities of sewage can be taken out of it by irrigation that we are justified in forcing people by law to adopt that system?—I am not able to say what the result may be of the analysis of that water, but with reference to Croydon water, which I examined personally, it ran off perfectly clear; following that water a couple of hundred yards it passes into the River Wandle, and as it passes into the Wandle I find fish in great abundance, as well as plants living, and everything to indicate life; there were no poisonous effects visible from the discharge of the water into the river at that spot.

3926. Have you ever taken any medical evidence upon the subject?—Not with reference to its condition after it has been filtered through land.

3927. Sir *G. Bowyer.*] The presence of fish in a healthy condition is a criterion of the absence of poisonous matter?—Yes.

3928. Sir *M. H. Beach.*] The Conservators have jurisdiction over the actual bed of the river, have they not?—Yes.

3929. And not the Metropolitan Board of Works?—No.

3930. The jurisdiction of the Metropolitan Board of Works ends with the sewage?—We have jurisdiction over the river going down to low water.

Re-examined by Mr. *Wilkinson.*

3931. But the Conservators have nothing to do with sewage; that is expressly enacted by the Act of 1856, the 106th section; the Conservancy Act of 1857 protects the rights of the Conservators?—Yes.

3932. The Board of Works, I think, have shown their confidence in the principle of purification by irrigation, by promoting to a certain extent the Essex Reclamation scheme, have they not?—Yes.

3933. Of course, if that can be carried out successfully, there would be no discharge of sewage into the Thames at all?—None on the north side.

3934. Is there any doubt on your mind that if the success of the north side is established, the same principle will be applied to the south side?—Not the slightest.

3935. Then

3935. Then the result would be the entire freedom of the river from all discharge of sewage at any point?—Just so.

3936. In order to be quite accurate, I will put this question to you; you told the Committee that the members of the Board of Works served gratuitously?—Yes.

3937. But the chairman is a salaried officer?—Yes.

3938. With the exception of the chairman and staff, there are no other paid officers?—No.

3939. Now, with reference to any novelty that has occurred since the unsuccessful application of 1864, do I understand you to say that since that time you have had actual experience of conflicts between the Conservators and the Metropolitan Board of Works?—Yes; the filling in, for example.

3940. That has occurred since 1864?—Yes.

3941. You have told us that you apprehend the control of the Embankment will remain in the hands of the Metropolitan Board of Works?—Yes.

3942. Now, supposing that to be so, will it not be almost a matter of course that questions which may involve a conflict will arise from time to time?—They must.

3943. Take, for instance, the steam boat piers and stairs; are those steamboat piers and entrances to be constructed by the Board at their expense?—Yes.

3944. Then those would be a fertile subject of controversy between the two Boards, both with respect to the expense and with respect to the general management of the piers and entrances?—It is possible that that might be the case.

3945. Then, upon the subject of the number of members whom your Board seek to introduce into this Conservancy Board; I understand you to say that your great object is that there should be a sort of harmony of action, in consequence of the free representation of the opinions of the Board of Works and the other Board?—Yes.

3946. That could hardly be effected by a mere delegate attending at that Board, I mean a delegate from your Board attending the Conservancy Board?—I do not understand the expression "delegate"; I meant as a member of the Board, with all duties and responsibilities.

3947. He might be from time to time a person deputed from the Board of Works to represent certain views on certain occasions at the Conservancy Board?—An officer of the Board to take a share of the duties.

3948. The suggestion is that there should be a delegate from your Board from time to time attending the Conservancy Board; would that, in your judgment, give such a representation as you think the Board of Works are entitled to?—Certainly not.

3949. Then, with regard to the number, as I understand you, it is not your intention to contend for any power of influencing votes on the part of the Board of Works by numbers, but that there should be the fullest representation of their opinion?—Just so.

3950. But, supposing there be one member only at the Board, would there not be an inconvenience arising in consequence of his inability to attend occasionally?—Yes.

3951. Having regard only to the facility of representing the views of the Board, do you think that three would be the fair and proper number for the Board of Works to maintain on the Conservancy Board?—I think three would be a very fair and reasonable number.

3952. You have told the Committee distinctly that you have no objection to the election of this special body by ratepayers or parties who represent their particular interests, but you do object to the nomination of that particular body of men interested specially in matters which may bring them in collision with the governing body of the Thames, and you think that the interests of the public would require a control on the part of the representatives of the public, and not of any particular body of men, whether they are traders or otherwise; the health of towns is of course involved in the purity of water; but are there not other questions affecting ratepayers generally, such as economy of management, which would be promoted if there was harmony of action between the members of the two Boards; would there not be the means afforded by this representation of opinion, of lessening the expenses which would otherwise be incurred?—I do not know what class of expenses you refer to.

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3953. Take, for instance, as an illustration, this filling in of the Thames. If there had been harmony of action between the Boards, the expenses of litigation (although in this instance it did not proceed as far as litigation) might be avoided by a joint action of the two Boards?—It might.

Mr. *Daniel Godfrey*, called in; and Examined by the *Committee*.

Mr. *D. Godfrey.*

3954. Sir *G. Bowyer.*] Do you wish to offer any observations to the Committee with regard to this Bill?—I understand that you have made inquiry in my absence, whether the Local Board of Health Act was in operation at Abingdon; it is not. We are governed, with reference to drainage and sewage, by a body called the Commissioners of Paving, formed under the Act; of course, in any arrangement which may be made if this Bill passes, we wish to be represented on the Board of Conservancy; that would be an object with us.

3955. We have not decided that question at present, but you would wish to be represented?—We wish to be represented.

3956. How are you affected with regard to your powers and the manner of disposing of your sewage, so as to avoid sending it into the river?—At present we have no works for that purpose; our sewage does go into the river at present.

3957. Could you not, by arrangement with some neighbouring landowner, dispose of your sewage?—I am not aware that we can; that subject has never been discussed by the authorities, that is, by the Town Council, or by the Commissioners of Paving; no need has ever arisen, until now, for discussing that question.

3958. But if this Bill passes, it will prevent you throwing your sewage into the river, and you will probably then have no difficulty in finding some other mode of disposing of your sewage, such as an arrangement with some of the landowners at Sutton, or some other convenient place?—I am not prepared to say that we should not have difficulty, because there is a general objection, as far as I know at present, to the dispersion of sewage over the country; that prevails at Abingdon; we have the Thames Purification Bill, as it is called, before us; there are parties who object because they think that sewage being emptied either below or above the town is a great nuisance.

3959. Are you not aware that there are landowners who think sewage, if properly applied, will be both a public benefit by causing the river to become unpolluted, and also a benefit to the landowners?—There may be landowners of that description, but I do not know them; at present the subject has not been sufficiently discussed.

3960. You are aware that that view has been taken by the landowners with regard to Oxford?—I was not aware of that; but I am aware that the landowners of Croydon and Worthing, which are the places which we have heard discussed in this room, do approve of the dispersion of the sewage over their land.

3961. Do you object to that portion of the Bill which would prevent you casting your sewage into the river?—We do as far as we can, because we have expended a great deal of money on our works, no less than 1,000 *l.*

5962. Upon your drains?—Yes; there is an old drain of very ancient date, which was formed for the drainage of the hills, particularly from Boar's Hill, that has been formed a great number of years, beyond any trace which I can give you at this moment.

3963. Do you not think that you would be able to find some landowners who would be willing to fall into the views of the Town Council, for the purpose of disposing of that sewage?—I speak particularly with reference to one landowner, to whom I mentioned the subject yesterday, and he said he should be very glad to do away with such a nuisance as he conceived the sewage would be to him; he is a considerable landowner; he is Mr. William Graham, brother of Mr. Thomas Hedges Graham, the gentleman who has been examined.

3964. Probably it is rather near to his house?—It is within a mile of Abingdon.

3965. Mr. *Reilly.*] The corporation of Abingdon is not the Local Board of Health, I believe?—No.

3966. But

3966. But there are Paving Commissioners constituted under the Local Act? —Yes.

3967. Have they any borrowing powers?—They have borrowing powers, but not powers for purchasing land.

3968. They have adequate borrowing powers for the purpose of executing any outfall works?—That would be reckoned a very expensive thing for Abingdon; we have exceeded all our borrowing powers now by about 1,500 *l.*

3969. Have you considered whether you could obtain authority under the Local Government Act, by means of a provisional order to raise further money? —We have never discussed that at all.

3970. That is to say, you have not attempted it; but have you considered whether you could not obtain borrowing powers specially without adopting the Act generally?—I have not considered that.

3971. Sir *G. Bowyer.*] Have you considered whether you could employ any portion of the money which proceeded from the enfranchisement of leaseholds for the purpose of this improvement, namely, undertaking the sewage of the town?—The 92nd section enables the council to apply any part of the surplus fund for the benefit of the inhabitants and the improvement of the town; I think those are the words; but then that surplus fund would never be sufficient to enable us to carry out the necessary works.

3972. What do you call your surplus fund?—Our income is about 1,400 *l.* or 1,500 *l.*, and supposing our expense is 1,200 *l.*, you will see what the surplus is.

3973. Then you would be able to borrow under the Local Government Act? —The question has been put to me whether I have considered that Act with reference to that point; I never have.

3974. However, we may take it that your paving commissioners would be very anxious to divert the sewage of Abingdon from the Thames, if possible?— They would be very anxious to do so, if they were not put to a very great expense; our petition sets forth that we ought to be relieved from that expense by those who are benefited by the purification of the water.

3975. If the towns above Abingdon were prevented from sending their sewage into the river that would be a great benefit to Abingdon?—I cannot conceive but what it would be.

Friday, 22nd June 1866.

MEMBERS PRESENT.

Mr. Acland.	Mr. Neate.
Sir Michael Hicks Beach.	Mr. A. W. Peel.
Sir George Bowyer.	Colonel Napier Sturt.
Lord Eustace Cecil.	Captain Vivian.
Mr. Milner Gibson.	Mr. Yorke.
Colonel Gilpin.	

THE RIGHT HON. THOMAS MILNER GIBSON, IN THE CHAIR.

Mr. *Macnamara* stated, that the Corporation of Reading held a meeting yesterday with reference to the Bill, and passed several Resolutions, and applied that they might be entered upon the Minutes.

Mr. *Phinn* objected upon the ground that they only referred to a question between the Corporation and Mr. Rawlinson.

After some discussion, the Committee decided that, as they did not relate to the merits of the Bill, they could not be entered upon the Minutes.

Joseph William Bazalgette, Esq., called in; and Examined by Mr. *Burke*.

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3976. You are, as we know, Engineer to the Metropolitan Board of Works?—I am.

3977. It is under your superintendence that the whole of the Metropolitan Main Drainage and Thames Embankment have been carried out, is it not?—Yes.

3978. In carrying out those works have you been brought into frequent communication with the Thames Conservators?—I have.

3979. I believe your district extends from Barking in Essex to somewhere above Putney, and that neighbourhood?—The River Lea is the boundary; we have certain detached portions beyond that, and from that near to Putney.

3980. Are all the outfall sewers within that district, and the streams running into the river, within your jurisdiction?—They are.

3981. There are a great many of them, are there not?—There are a large number.

3982. Is that a list of them?—Yes.

3983. Does that contain a list of the names of sewers and streams discharging sewage into the Thames, or which did discharge sewage into the Thames, within the jurisdiction of the Metropolitan Board of Works?—It does.

[*The same was handed in, and is as follows:*]

LIST of Sewer Outlets and other Works of the Metropolitan Board of Works upon the River *Thames*, in connection with the Main Drainage and Thames Embankment.

J. W. Bazalgette, Esq.

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North Side of the River.

Stamford Brook Sewer Outlet, Hammersmith Creek, Hammersmith.
Brook-green Sewer Outlet, Bridge-road, Hammersmith; Queen-street Sewer Outlet, Queen-street.
Fulham Sewer Outlet, Fulham or Putney-bridge, Fulham; Eel Brook Sewer Outlet in the Kensington-canal, near to its Outlet in the Thames by Cremorne.
Counter's Creek Sewer Outlet, Cremorne, Chelsea.
Church-street Sewer Outlet, by Chelsea Old Church, Chelsea.
Queen-street Sewer Outlet, by Queen-street Free Dock, Chelsea.
Smith-street Sewer Outlet, by Chelsea Royal Hospital, Chelsea.
Ranelagh Sewer Outlet, by - ditto.
King's Scholars Pond Sewer Outlet, by Vauxhall-bridge, Pimlico.
Grosvenor Ditch Sewer Outlet, Millbank.
Horseferry-road Sewer Outlet, by Lambeth Suspension-bridge, Westminster.
Wood-street Sewer Outlet, by Wood-street, Westminster.
Regent-street Sewer Outlet, by Great Scotland-yard, but will pass near that point as storm overflow through the Thames Embankment Works into the river.
Victoria-street Sewer Outlet, by Scotland-yard, but will pass near that point as storm overflow through the Thames Embankment Works into the river.
Northumberland-street Sewer Outlet Works, Northumberland-wharf, but will have a storm overflow through Embankment Works into the river.
Savoy-street Sewer Outlet, by Waterloo-bridge, with like storm overflow.
Norfolk-street Sewer Outlet, Norfolk-street, with like storm overflow.
Essex-street Sewer Outlet, Temple-pier, with like storm overflow.
Fleet Sewer Outlet, Blackfriars-bridge.
Goswell-road Sewer Outlet, Dowgate-dock.
London-bridge Sewer Outlet, London-bridge.
Irongate Sewer Outlet, Irongate-stairs, Tower-hill.
Nightingale-lane Sewer Outlet, Nightingale-lane, London-docks.
Hermitage-street Sewer Outlet, Union-stairs.
Old Gravel-lane Sewer Outlet, Thames Tunnel.
Wapping-wall Sewer Outlet, Wapping-wall.
Pennington-street Sewer Outlet, Gould's-hill, Ratcliff.
Ratcliff-highway Sewer Outlet, Ratcliff-cross.
Limekiln Dock Sewer Outlet, Limekiln Dock, Limehouse.
Great Barnfield, or East and West India Dock Sewer Outlet, Soames's Ship-yard, Blackwall.
Drunken Dock Sewer Outlet, Cubitt's Pier, Isle of Dogs.
Blackwall Sewer Outlet, West India Docks Entrance, Blackwall.

The above at present discharge the sewage from the main lines into the river. Ultimately, when the Low Level Sewer is completed, these outlets will act only in cases of heavy rains as storm water outlets.

Main Outfall Sewer Outlet, near Barking Creek. This sewer has also a storm overflow into the River Lea.

About 5,700 feet of granite-faced Embankment wall, with landing piers, &c., in course of construction, between Westminster Bridge and eastern end of Temple Gardens.

South Side of the River.

Beverley Brook, Barnes.
River-street, Putney (storm overflow).
Wandle River, Wandsworth.
Jews' Row, Wandsworth Pier } Storm overflows.
Falcon Brook, Battersea - }
Spencer Outlet, Battersea.
Heathwall, Nine Elms } Storm overflows.
Effra, Vauxhall - - }
Archbishop's Sluice, Lambeth Church.
Stangate Sluice, Lambeth.
Arnold Sluice, Cornwall-road, Lambeth.
Dover Sluice - ditto - ditto.
Pudding Mill Sluice, Holland-street, Blackfriars.
Boar's Head Sluice, Bankside.
Welsh Troopers' Sluice, Bankside.
Bear Sluice, Park-street, St. Saviour's.
Battle Bridge, Mill-lane, Tooley-street }
Great St. John, Horsleydown - - } Storm overflows.
Duffield, Bermondsey-wall - - }

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SOUTH SIDE OF THE RIVER—*continued.*

Limekiln Sluice.
Globe Sluice - } Rotherhithe.
Durand's Wharf } Rotherhithe.
Rotherhithe Pier }
Earl Outlet, St. George's Stairs, Rotherhithe }
Church-street, Deptford - - - - } Storm overflows.
Pumping Station, Deptford Creek - - }
Horseferry-road Sewer, Greenwich.
1 main and 2 supplementary outlets, }
1,300 of river wall, and } At Crossness Pumping Station.
2 landing stages, }

About 512 feet of river wall and barge bed at Deptford Creek Pumping Station.

4,300 feet of river wall, with landing stages, places, and subways, in course of construction for the Southern Embankment, from Westminster Bridge to near Vauxhall Bridge.

(signed) *J. W. Bazalgette*,
Engineer.

17 May 1866.

3984. May I ask how you have dealt with them since you have had the charge of the purity of the Thames?—The sewage has been diverted from them, and they are now used either for letting the water from the Thames into the sewers for the purpose of flushing and cleansing them, or for discharging storm water in the times of heavy floods.

3985. Do you find it necessary to cover in some of those sewers on the foreshore of the river?—We have covered in a great many of them from high-water mark to low-water mark; there are others which will still have to be covered in.

3986. Does that necessitate on your part communication with the Conservators of the Thames?—Yes; whenever we do anything beyond high-water mark in the river it requires to be done with the sanction of the Thames Conservators.

3987. In carrying out your Thames Embankment works, if you desire to make any, the slightest deviation from the line of those works, it can only be done by the consent and concurrence of the Thames Conservators?—Any deviation beyond five feet must have their consent.

3988. In carrying out your Thames Embankment you propose, I presume, to have several landing places for steamboats, do you not?—We do.

3989. Do you desire to carry them according to some uniform architecture consistent with your Thames Embankment?—Yes; we have designed them with that view, as well as to accommodate the traffic in the best possible way; instead of a single dummy, alongside which the up-boat will come, and the down-boat will have to go outside of that, in many cases the passengers having to cross the up-going boat to go to the down boat, we have provided two sets of piers, one for the up-boats and the other for the down-boats.

3990. Does the formation of these works necessitate on your part application to the Thames Conservators for their consent and concurrence?—Certainly all projections into the river require their concurrence.

3991. Have you from your experience in carrying out these works formed any judgment as to the desirability in the interests of the public of the Metropolitan Board of Works being represented on the Thames Conservancy Board?—I think it would very much promote the public interests.

3992. Supposing any members of your Board were to be on the Thames Conservancy Board, would they have any other object in view than securing the public objects which they were constituted to carry into effect?—No other that I can imagine.

3993. One of your main objects is, I think, maintaining the purity of the Thames, is it not?—It is.

3994. I think, under your recent Act of Parliament, the Preamble recites that it is necessary, with a view to the health of the metropolis, that the works should be undertaken and completed under the superintendence and control of the Metropolitan Board of Works?—Yes.

3995. You have told us the number of outfall sewers that you have dealt with; your works for the purification of the river by the system of main drainage, are of an enormous character?—Yes.

3996. What outlay have you incurred for all those works?—About 4,000,000*l.*

3997. And that levied by taxation of the metropolis?—Yes.

3998. Supposing any impurities to come from above your jurisdiction, they would

would interfere with what you have done for ensuring the purity of the Thames?—That clearly must be so; and inasmuch as building is going on now very rapidly all round the metropolitan boundary, the increase of sewage poured in just outside the jurisdiction of the Board is very great, and is becoming greater every year.

3999. Supposing a certain number of your Board were on the Conservancy of the Thames, it would be their object, would it not, to secure that nothing should be done which should interfere with your operations, which are at present within your jurisdiction?—Yes, it would tend to produce unity of action between the two Boards.

4000. And with no other object in view than the public interests?—Certainly not.

4001. I presume they consult you from time to time as their engineer, in all works which are necessary to be done, and all nuisances which it is desirable to prevent, do they not?—Yes.

4002. Supposing the members of the Metropolitan Board of Works who were on the Conservancy Board, had the advantage of your experience and advice, would they not be able to offer at all times judicious advice to the General Conservancy Board, with reference to what is within your jurisdiction?—I have no doubt they would have the opportunity of bringing matters before them from different points of view to what would be brought before them at their own Board.

4003. Supposing your objects and theirs to have to a certain extent an identity, is it not desirable that there should be a perfectly harmonious action between the two?—Yes.

4004. Instead of being two bodies separate from one another, is it not desirable that you should be represented on the Conservancy Board, so that your views should be always before them, and that they may have an opportunity of knowing what those views are?—I have a very strong opinion that that would be of great advantage.

4005. Can you suggest any one possible disadvantage?—No; I know of none.

4006. It has been stated here that there is a disinclination to increase the number of the Conservancy Board; what number does your Board consist of?—Forty-five.

4007. Do you find practically any inconvenience in carrying on your duties and obligations with that number?—None whatever.

4008. You are enabled thereby, I believe, to have a considerable number of separate committees for different business?—Yes; the chairman stated in his evidence the other day that he did not see how the Board could be worked with a smaller number, or how they could get through the business without that subdivision.

4009. I presume that what you are desirous of is, that any nominee upon the part of the Metropolitan Board of Works to the Conservancy Board, should not have the character merely of a delegate, but should also have a voice in what is done above your jurisdiction, simply and solely with the view of ensuring that there should be no interference with what you are doing?—Yes.

4010. Have you frequently had occasion to attend the Conservators yourself?—Frequently.

4011. What has been the course pursued; I suppose you make your statement and withdraw, and then they deal with the subject as they think fit afterwards?—Yes, a formal deputation goes before them; we then make our statement; they then consider that statement and deal with it; I regard that as a very different thing to having the views of the Board represented by a member who is present at the discussions, and who may from time to time remove erroneous views, and bring out facts which are not known; that is the only business-like and only beneficial way, to my mind of bringing the views of the Metropolitan Board of Works properly before the Conservancy Board.

4012. If your members were present at the Board they would have a constant opportunity of hearing matters discussed and offering their opinions and advice?—I think there are great advantages in free discussion, and having gentlemen present who look at the same subject from different points of view, and bring their views together; I think that tends to lead to a right conclusion in the most convenient way.

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4013. For instance, at this moment, I believe, you are proposing to make a work upon the banks of the Thames which they are opposing in Parliament?—They are opposing the Chelsea Embankment.

4014. Have you had to place yourselves in communication with them to ascertain what their objections are, and to see how matters can be arranged, or what is the course that has been adopted?—Yes, that is just an illustration of what I think has frequently occurred, and must frequently occur as we exist at present; in this case the Thames Conservators petitioned against the Bill which the Metropolitan Board of Works are promoting, for constructing an embankment on the north side of the Thames, near Chelsea; the Metropolitan Board of Works, upon seeing that Petition presented, directed me to communicate with the engineer of the Thames Conservators, with a view of getting these objections removed; I did so, and a different line was suggested by the Thames Conservators; there were reasons why that line could not be carried out, which were pointed out, and eventually the Metropolitan Board of Works and the Thames Conservators agreed on a line for the Chelsea Embankment; but the Petition of the Thames Conservators was, nevertheless, not withdrawn; upon finding that was so, I was again directed to communicate with the engineer of the Thames Conservators, to ascertain why the Petition had been withdrawn; and upon doing so I received a reply from him that there were some objections entertained with respect to the price of the land to be retained, and with reference to the filling in, but that he was not authorised to communicate with me upon the subject; the matter has, I believe, since dropped, and it remains to be discussed before Parliament; now, I think, if the Board of Works have had a voice upon the Conservancy Board, that those were matters which would have been readily adjusted between them.

4015. You are in point of fact left to negotiation as though you were hostile parties, when in truth you ought to have almost an identity of interests?—Clearly; in that case it is a public improvement, an improvement of the River Thames, in which we must both have an interest.

4016. This involved trouble and delay, and expense of all kinds?—Yes.

4017. I think upon that very subject you received this letter signed by Mr. Leach, the engineer of the Thames Conservators:

CHELSEA EMBANKMENT.

Thames Conservancy, Engineer's Office,
41, Trinity-square, Tower-hill, E.C.,
2 June 1866.

Dear Sir,

I believe that the matter yet unsettled, and respecting which I have had no authority to confer with you, are the provision as to the filling in, and as to the valuation of the foreshore, which would be inclosed.

I mentioned the subject to Mr. Wyatt some days since, and I understood from him that he would communicate with your Board upon these matters.

Yours, &c.
(signed) *Step. H. Leach.*

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That is the style of letter you get, is it not?—That was the letter I referred to, and so the matter rests.

4018. Since then nothing has been done?—No.

4019. Supposing you had a representative on that Board, is it not highly probable that all these matters might have been settled in harmony between the two parties who are concerned for the general interests of the public?—Yes, I think half an hour's free discussion is worth dozens of formal communications by correspondence.

4020. Mr. *Phinn.*] I think I ought to say, on the part of the promoters, that my instructions are neither to promote nor oppose this claim of the Metropolitan Board of Works, but to leave the matter entirely in the discretion of the Committee; I think it is better rather for argument than for evidence, and therefore I shall not cross-examine Mr. Bazalgette on the subject.

Cross-examined by Mr. *Clerk.*

4021. You have stated more than once to-day what was said by my friend Mr. Burke two or three times in his address to the Committee last Tuesday, that you had charge of the purity of the Thames?—Yes.

4022. And that one of the main objects of the constitution of the Metropolitan Board of Works is to maintain the purity of the Thames within certain limits?—Yes.

4023. I think your Board was elected in the year 1854, was it not?—At the end of 1855.

4024. By that Act you were substituted for the existing Commissioners of Sewers?—We were.

4025. Under that Act I believe you carried out a very extensive system of drainage, the object of which was to discharge all the sewage of the metropolis into the river?—At a lower point.

4026. I will put the question again: when you first came into power was not your first work connected with the sewage to establish a large system of arterial drainage, with a view to discharging the sewage of London into the river?—Within the metropolis, do you mean?

4027. Within the metropolis?—No.

4028. When was the first main drainage scheme authorised for removing sewage from the river?—I should say that was the paramount object.

4029. There was an Act passed, was there not?—The Act was passed at the end of 1855.

4030. I am speaking of the Act authorizing the main drainage for removing sewage from the river, the Metropolitan Main Drainage Act was passed in August 1858?—Yes.

4031. You were established in the year 1855, but the first Act with a view to the purification of the Thames and the main drainage, was passed three years afterwards, in 1858; that was so, was it not?—Yes.

4032. In the meantime, between 1855 and 1858, had you not been constructing a large system of arterial drains in London, which led to the condition of the Thames being in such a state that it became necessary to pass that Act in 1858?—No, certainly not; immediately upon the constitution of the Metropolitan Board of Works, I received instructions to prepare designs for the interception of the sewage of the Thames, and the purification of the river.

4033. But nothing was done until the year 1858 for that purpose?—A great deal was done.

4034. By the construction of sewers?—No a great deal was done for promoting that object, but the Metropolitan Board of Works were fettered by a veto from the First Commissioner of Works, which was so exercised as to delay their carrying out those works, which led to a variety of controversial reports and occupied a great deal of time; the Act of 1858 removed that veto, giving the Board power to deal with the subject freely themselves.

4035. That was the first Act that was passed for the purification of the Thames, was it not; if you will refer me to any other, I will call the attention of the Committee to it?—I do not propose to give any opinion upon it; I presume the first Act contemplated the purification of the Thames; at all events it was so regarded by the Board, and they so dealt with it.

4036. The Act will speak for itself; at the time when the last Conservancy Act was brought in, in 1864, your main drainage works were in the course of construction?—They were.

4037. At that time you applied to Parliament to have a representation upon the Conservancy Board?—We did.

4038. And that was rejected?—It was, I believe.

4039. Since that time, I believe all those outfall works to which you have referred, have been constructed?—Nearly all.

4040. And the great work in which you were interested, with reference to the purity of the Thames, has also been completed, so far as the north side of the Thames is concerned?—No; so far as the south side is concerned it is completed; it is not completed on the north side.

4041. But it will be very soon?—Yes.

4042. Are you not discharging at Barking Creek now a very large quantity of sewage?—Yes, but not from the whole of the Low Level Sewer; that portion which is being formed in connection with the Thames Embankment is not completed.

4043. You said just now, that you had constructed landing places for steamers; what do you mean by that; do you mean stairs in the Embankment?—Yes.

4044. The only work which you have had to do, is to construct stairs along

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the face of your own embankment, so as to enable piers hereafter to be placed there by the Conservancy?—No, we are doing a great deal more than that; we have constructed the stairs, piers, moorings, and dummies ourselves (we are not doing it at this moment, but it is part of the design), so as to make the whole thing complete; and all that the steamers will have to do is to come and run alongside the stairs, and use them when we have them ready.

4045. Do you mean that you have any powers under the Act to place dummies in the river?—We have power to place them between our piers; we have, with the consent of the Conservators, projected piers beyond the face of our embankment wall, and within those piers we have power to place dummies.

4046. But the whole control of the piers is in the Board of Conservators?—Well, no; there is a divided control, and that is just the point.

4047. But is it so?—It is.

4048. Where, in your Act, can you refer me to anything which gives you any authority, except with the consent of the Conservators, to place piers in the river?—I have not the Act before me, nor do I propose to interpret the Act at all; all I know is that, acting upon the Act of Parliament, we have submitted plans for piers to be erected, which have been assented to by the Conservators; we are actually constructing some of them.

4049. I think you told me that at the present time you have done no more than construct the stairs leading down from the Embankment?—The works are not completed, and it is for that reason I think it of the highest importance that this Board should be able topoint out any object they have in view, and in seeing that arrangements are made so that the works are made use of in the most beneficial manner.

4050. Your idea is that three members of the Metropolitan Board of Works should be elected, or delegated, from that Board to sit upon the Board of Conservators?—I have not expressed any view upon it; but I think that would be a very convenient arrangement, so far as I can judge.

4051. I can only judge by what is asked for by my learned friend, that a certain number of your Board should sit upon the Conservancy Board; that is your view?—That is my view.

4052. I suppose you mean with the view of expressing the opinion of your Board to the Conservancy Board?—Yes, with that view.

4053. Then you differ in that respect with the view taken by Sir John Thwaites on Tuesday last, that the representation should be the representation of three millions of ratepayers?—No.

4054. In Question 3850, on Tuesday, this was asked Sir John Thwaites, "Then you would hardly advocate that the Board of Works should send one of their own number as their nominee to protect their individual interests, after what you have told me of their objection to the principle of this clause." To which he answers, "I have no objection whatever that the metropolis at large should elect; I simply spoke of our Board as representing the ratepayers." Then he is asked, "I am not asking you so much as to what you have no objection to in principle, but do you advocate that you should send one or more of the members of your own Board?—The purpose is to represent the ratepayers of the metropolis who are not represented; and not to represent the Metropolitan Board of Works and its own particular jurisdiction or interests, but merely the ratepayers?—Undoubtedly." Unless there was some person sent from the Board of Works knowing the views of the Board of Works, and expressing them to the Conservators, how could there be any facility afforded for transacting business, if you had different views of the question?—I entirely agree with that answer of Sir John Thwaites.

4055. Are they to be members elected by the 3,000,000 of ratepayers, or are they to be merely delegated by the Board of Works?—What Sir John Thwaites meant by that answer was that the members of the Metropolitan Board of Works were elected by the ratepayers, and that they represent the ratepayers with reference to these duties.

4056. I want to get your view as to how the three members, whom you say ought to join the Conservancy Board, are to be nominated at that Board; is it by the Metropolitan Board of Works, or are they to be elected by the ratepayers themselves?—I think it is immaterial whether they are to be nominated by this Committee, or by the Metropolitan Board of Works.

4057. How are they to be elected; are they to be elected by the vote of the ratepayers,

ratepayers, or are they to be nominees of the Metropolitan Board of Works?—I do not know; that is a very immaterial point.

4058. I think it is a very material point?—What would occur to me as the most convenient way would be, to allow the Metropolitan Board of Works to select three of their own number.

4059. Do I understand you to advocate that as a course which would be likely to facilitate the transaction of business at the Conservancy Board?—I think very much indeed.

4060. The matter upon which you were most at issue with the Conservators was upon the question of the filling up, and backing of the Embankment during its construction?—We had a great deal of difference upon that point.

4061. With the exception of what you referred to just now as to a Bill in Parliament, I believe no controversy ever existed between you and the Conservators?—I should not term what I have alluded to a controversy; we have had very many points upon which there were differences of opinion which required explanations, and upon which I had to attend the Conservators to afford them explanation.

4062. Then you do not even call the dredging question a controversy?—What I have said is, that I did not call what I alluded to just now a controversy.

4063. Was there ever any dispute between your Board and the Conservators, except upon this question of dredging?—There was a great difference of opinion upon various points.

4064. Can you mention any matters on which there were any differences of opinion, except on this question of the dredging?—They do not occur to me at this moment, but, as I stated before, there have been a great number of cases in which I have had to attend the Conservators.

4065. But you cannot mention any?—Not on which there has been any controversy, but there have been a great many points on which we have entertained different views, on which I had to attend them, and negotiate and had explanations with them.

4066. Now, upon this question of dredging there was a great deal of controversy, was there not?—Yes, a great deal.

4067. I believe that in the result the question was whether the Conservators should dredge, and your contractor, Mr. Furness, should take the material dredged from the river, and pay for it, or whether you should receive material from the Conservators and pay for receiving it from them?—No, I beg your pardon; the question was a very much wider one than that; the question was first, as to the locality from whence the material was to be dredged; then the next question was, as to the quality of the material to be placed on the Embankment; and a third question was, as to the price to be paid for the material, we contending that the price at which we knew materials could be dredged in other quarters was the proper price to charge the Metropolitan Board of Works; as a public body, the Conservators had a duty to perform in dredging the river, and should not make a profit out of the ratepayers in dredging the bottom of the river.

4068. You contended, I believe, that the quality of the material dredged by the Conservators was not good, and that was one of the reasons why you refused to receive it, did you not?—We did.

4069. In consequence of that you received a great quantity of material brought from the land, and used it instead of the material dredged?—We did.

4070. And you got paid by the contractors, who brought that spoil to the Embankment?—Oh, dear, no.

4071. Did they not pay for the right to deposit there?—Certainly not.

4072. They deposited it there for nothing, then?—They deposited it there under their contracts.

4073. The contractor deposited that stuff on the Embankment without paying for it?—The contractor deposited it, and it was paid for by us.

4074. But he had not to pay the persons who brought that stuff to him?—In some cases he had, and in some he had not; I know nothing about his arrangements.

4075. If he received it from the River Thames he had to pay the cost of dredging, which I think was 6 *d.* per ton?—He had.

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4076. You raised an objection as to the quality of the material that was given?—We did.

4077. I believe you first had a report from two engineers employed by yourselves, and then, I believe, the Conservators had the opinion of two other engineers taken on their part?—Yes.

4078. And eventually the matter was referred to the Board of Trade?—Yes.

4079. After a great deal of discussion, which I am loth to weary the Committee with, will you allow me to call your attention to this letter, which was addressed to the Chairman of the Metropolitan Board of Works from the Board of Trade:—

The Secretary Board of Trade, to the Chairman of the Metropolitan Board of Works.

(H.—4061.)

Sir, Board of Trade, Whitehall, 14 June 1865.

I AM directed by the Lords of the Committee of Privy Council for Trade to acknowledge the receipt of a letter of the 12th instant, from the Metropolitan Board of Works, stating the conclusions to which they have come with respect to the questions at issue between themselves and the Conservators of the Thames, on the subject of the material to be used for the Thames Embankment

The Board of Trade cannot but view those conclusions with regret; they recognise to the fullest extent the obligations of the Metropolitan Board of Works, with respect to the Thames Embankment, and the essential importance of constructing that work in a solid and satisfactory manner; but, whilst recognising this obligation, they feel that it is an object of no less public importance to maintain and improve the navigation of the River Thames, and to compensate that navigation for the abstraction of water caused by the Embankment. This object was fully considered by the Select Committee, which settled the Bill under which the Board of Works are now acting, and it was their intention that the materials used for the Embankment should be taken from the river.

Under these circumstances it was, no doubt, the duty of the Board of Works to use these materials as far as practicable, a duty which is, in fact, admitted by the terms in which the contract for the Embankment has been made, as well as by the tenor of all the correspondence on the subject. The question, and, so far as the Board understand, the only question has been, whether the materials dredged from the Thames were proper materials for the Embankment.

As matters have turned out, it has proved to be very much to the interest of the contractor to take the materials from the land, for taking which he is paid, instead of taking them from the water, for which he has to pay.

Under these circumstances, it has been alleged on the one hand, on the part of the Board of Works, that the materials taken from the water were improper materials, and on the other, by the Conservators, that they were proper materials. Two engineers, selected by the Metropolitan Board of Works, have reported that, to some extent, they were improper materials. Two engineers, selected by the Conservators, have reported that they were excellent materials.

Under these circumstances, the Board of Trade, with the consent of both parties, referred the question to two perfectly independent and very competent men, one of whom, Mr. Rawlinson, was suggested by yourself, and the other of whom, Mr. Coode, is well known as one of the very first authorities on all matters connected with marine engineering.

Both of these gentlemen are totally unconnected with either the Conservancy Board or the Board of Works, or with any contractor for works in London. They have made a very careful and elaborate report, and have given it as their decided opinion that the materials dredged by the Conservators from the Thames are excellent materials for the Embankment. This report was sent to you on the 9th of March 1865.

After a lapse of three months, the Metropolitan Board of Works, without entering into details, and without giving explicit reasons, and, as my Lords understand, rejecting the report of their own Committee, decline to act on the opinion of Messrs. Coode and Rawlinson, and propose to take a large part of the material for the Embankment from the land, to the prejudice of the river.

Under these circumstances, it appears to the Board of Trade that the Metropolitan Board of Works are bound either to suspend the taking of material from the land, or to give more full and satisfactory reasons for rejecting the report of Messrs. Coode and Rawlinson than are given in their letter of the 12th instant.

I am, &c.,

Sir John Thwaites. (signed) *T. H. Farrer.*

With regard to this letter, that was the state in which things were left. You refused to comply with the report of Mr. Coode and Mr. Rawlinson, and you took the stuff from the land and not the material which was dredged from the river

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river by the Conservators?—I may as well explain the whole state of the case. We began by taking the material from the river until we found that a very large proportion of it was not fit to be placed on the Embankment. We then had a great deal of correspondence with the Thames Conservators upon that subject. Some of it was so soft that it was impossible for anyone to walk upon it, because he would go in up to his knees. Then we eventually had Mr. Hawkshaw and Mr. Harrison to report upon it, they being two independent engineers, and they reported that it was unfit for use. There is no doubt that after their Report was sent in the material was very much improved. They shifted their barges and got us material from a better place. Then Mr. Cubitt, I think it was, and Mr. Beardmore, reported upon it for the Thames Conservators, and they said it was a better quality, and at the time Mr. Rawlinson reported upon it for the Board of Trade, which was the last report, the material then was of much better quality than it was in the first instance, but at the same time it was not as good and solid, nor ever has been as good and solid for the Thames Embankment as that material which was brought from the land and was carted in layers. It was a great thing to bring it in dry and solid instead of taking it out of barges as it was brought out from the water. An engineer, in building a bridge, if he wishes to make behind the abutments of his bridge solid, specifies that the material shall be brought in in thin layers and carted, which is the best kind of filling in; even Messrs. Rawlinson and Coode, when they reported upon this, agreed with me that for 20 feet at the back of the Embankment wall it was desirable, even if the material was taken from the river, to have that carted in from the land in the manner I have described. It was clearly admitted that where it was necessary to have the best kind of work that that was the proper mode of doing it.

4080. Do I understand you to assert that the material which was dredged by the Conservators (I am not speaking of what the contractor dredged in his works, but the material which was dredged by the Conservators when you first refused to receive it) was different in quality from that which was being dredged when Messrs. Coode and Rawlinson reported that it was excellent material for the Embankment?—I do.

4081. You saw it yourself?—Yes, I did; I say that that which was dredged by our contractor was a very small portion indeed; it was simply what was dredged in the trenches just in front of the Embankment; that was a very small portion of the material dredged; they say that the material, even the best material brought by the Conservators, did not form as good and solid an Embankment as the material brought from the land, and carried in the manner I have described.

The *Committee* intimated to the learned Counsel that it was unnecessary to pursue this line of examination.

4082. Mr. *Clerk*.] You have 45 members constituting the Metropolitan Board of Works?—We have.

4083. You work by committees, do you not?—Yes.

4084. Is not that provided by the Act?—I do not think that is compulsory by the Act, but I cannot tell you.

Re-examined by Mr. *Burke*.

4085. My friend has doubted whether you were constituted originally in 1855 for preserving the purity of the Thames; I find in that Act, with reference to the duties and powers of the Metropolitan Board of Works, "Such Board shall make such sewers and works as they may think necessary for preventing all or any part of the sewage within the metropolis from flowing or passing into the River Thames in or near the metropolis"?—That is the first Act, and those were our first operations.

4086. I understood you to state that immediately on the passing of that Act you were instructed to prepare designs with a view of carrying that object into effect?—Those were the first instructions we received.

4087. I find in the Preamble of the Act of 1858 this, "Whereas it is necessary, with a view to the health of the metropolis, that works should be speedily undertaken and completed for the purification of the Thames, and for the improvement of the drainage of the metropolis"?—That was the main object of the constitution of the Metropolitan Board of Works.

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4088. All I understand you to state is this, you do not ask to have the control yourselves of the Conservancy, but simply to have a representation at the Board, so that you may bring your views to bear on the other members, with a view to harmony of action?—Yes.

4089. My friend put it to you whether it was sought to have these persons elected by ratepayers, or nominated by your Board; your Board are elected by ratepayers, are they not?—They are.

4090. Every one of them?—Yes.

4091. Mr. *Sargood.*] They are elected by the vestries?—The vestries are elected by the ratepayers, and then the vestries elect the members of the Board of Works; and then the Board would elect their members for the Conservancy: that is the way in which it would be, I apprehend.

4092. Mr. *Peel.*] What works are you engaged upon within the limits of your river jurisdiction, besides the Embankment of the Thames?—Do you mean upon the Thames?

4093. Yes?—Besides the Embankment we are engaged from time to time upon the outlets, a list of which I have put in.

4094. Mr. *Burke.*] You have referred also to works on the foreshore which you constructed in connection with the high-water mark?—Yes.

4095. And which brings you again under the authority of the Conservators, do they not?—Yes.

4096. Now, as my friend has asked you about the Embankment stairs, whatever stairs are made must be made in conformity with your designs for making the Embankment, must they not?—Certainly.

4097. Therefore, if the Conservators claim a right over those stairs, is it not desirable that there should be harmonious action between the two Boards?—If I may say so, I think in the case which the learned Counsel has cross-examined me upon, that a little unity of action and a little representation upon that Board would have saved a great deal of trouble; he has touched upon one or two of the difficulties that arose; but there were a number of difficulties from time to time, such as ought not to arise between two independent Boards working for one object, but which arose from there not being sufficient harmony of action between them.

4098. *Chairman.*] It is only during the formation of this embankment, and when that is finished, so far as that is concerned, their connection will cease?—The same thing must arise repeatedly with reference to the steamboat piers.

4099. Sir *G. Bowyer.*] Why do you want three; would not one do for the purpose of communication between the two bodies?—One would not always be able to attend.

4100. Suppose it was one with a power of appointing a substitute?—I think that one large body would hardly be sufficiently represented by only one member; of course if there are two or three members, their reasons and arguments carry more weight.

4101. Mr. *Peel.*] Do you consider yourselves a more transient body than the Conservancy Board, as regards your operations on the river?—We have not considered ourselves as a transient body at all.

4102. Sir *G. Bowyer.*] When the Embankment is finished, you will have nothing to do but to keep it in repair?—We shall have to maintain the Embankment, and maintain our sewer outlets, having a charge over the purification of the river, and certainly the working of those steamboat piers is a thing we must always have a strong interest in.

4103. You will be responsible, will you not, in all time to come, for maintaining the purity of the Thames?—No.

4104. The Bill before the Committee is one that materially affects that question, is it not?—Yes.

4105. Although you have not the control of the Thames, yet your jurisdiction extends to preventing impurities from being thrown into the Thames?—Yes, we are very much interested in that question.

4106. Confining your observation to that object alone, would it not be desirable hereafter, you being responsible for the purity of the Thames, that you should have an opportunity, to a certain extent, of preventing impurities coming down from above?—I think it would be very desirable; I think it necessarily follows that the members of the Board of Works, whose attention has to be

be directed particularly to the purification of the Thames, should be upon that Board, because they perform a special duty which they can bring to bear with great advantage at that Board.

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William Tite, Esq., a Member of the House, called; Examined by Mr. *Wilkinson*.

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4107. I BELIEVE you have been a member of the Metropolitan Board of Works for some years?—I have.

4108. You are aware that the present Board of Conservators of the Thames is constituted of 18 members, representing various interests upon the Thames?—Yes.

4109. You are aware also that by the present Bill it is proposed to extend the constitution of that Board to the upper parts of the Thames, and to add to their body three members to be elected by the parties who at present constitute the Upper Conservators of the Thames?—Yes.

4110. Does it appear to you that that would present a favourable opportunity, inasmuch as the whole constitution of the Board is altered, for reconstituting the Board according to the present exigencies of the public?—So it appears to me.

4111. Have you considered the theory of introducing some members of the Metropolitan Board of Works upon that Board of Conservancy, and if so will you state to the Committee your opinion upon that point?—I think it is very desirable; the metropolis is represented by two great bodies, the Corporation of London and the Metropolitan Board of Works; the Metropolitan Board of Works represent much more largely than the Corporation of the City of London the metropolis proper, and I think it is not reasonable that the Metropolitan Board of Works, having the great jurisdiction which they have over the metropolis, should not be represented at that Board; I am sure it would be a convenience; the Thames Embankment will not end where it is now; we are going on with the Thames Embankment, and we shall go on with the Thames Embankment for a very great extent; I have brought in a Bill for embanking the whole of Chelsea, but we are at issue with the Conservators upon that, why I really do not know; the engineers have met and do not agree, and the Conservators of the river appear in opposition to that Bill; if we had one or two sensible men at that Board (one would not be enough) I am quite sure that they would agree, without causing the difficulty and expense that is mutually thrown upon the two bodies; we shall not end the Thames Embankment at Chelsea, and we shall, no doubt, carry on the Embankment on the other side of the river.

4112. Is it not the fact that the maintenance of the Embankment will involve questions of a similar character, and increase the duties which will be cast upon the Board?—Yes; I attended the deputation when we were at issue about the ballast; I am quite sure that that question never would have arisen if there had been a member of the Metropolitan Board of Works upon the Conservancy Board; however, I put it broadly upon the issue that I first put it on, which is, that there are two bodies, with the river running straight down through the whole of the metropolis; I think it is but proper that, as the City of London is represented upon the Conservancy Board, that we should be represented upon the Conservancy Board, as that Board is a body arising out of the Corporation of London.

4113. You attended the deputation of the Conservators on this ballast question?—I was one of the deputation.

4114. Do you think the facilities of attending as a delegate, the Board of Conservators offer the same advantages which will be afforded if the Metropolitan Board of Works were to form an integral part of that body?—Certainly not, because the dispute had then arisen, and had been carried to a great extent, and I assumed it likely that we should be at law one with another; it was a suggestion of mine that we should go as a deputation, and have a fair and frank meeting and discuss it, and we did so; and by that means we put an end to the possibility of law between the two bodies, and the expenditure of a great deal of money; if we had, as the Corporation of London have, one or two members

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upon that Board, I am quite sure that that question never would have arisen, or that quarrel have originated.

4115. Then, with reference to the general principle of the necessity of there being unity of management, and looking to the public interests of the two bodies, you think it desirable that the Metropolitan Board of Works should have a permanent representation upon the Board of Conservators?—I think so, and I cannot imagine what the objection is.

4116. *Chairman.*] What number of representatives do you think sufficient?—Two.

4117. To be chosen by the Metropolitan Board of Works?—Yes, sent by the Metropolitan Board of Works; I say two, because you cannot depend upon the health of one; the incidents which belong to the much-occupied lives of many of the Metropolitan Board of Works, such as ill-health, and so on, might prevent us having anybody there if there was only one representative.

4118. Mr. *Wilkinson.*] You would desire to have two, in order always to secure one being there?—Yes.

4119. *Chairman.*] It is not for the purpose of voting, but for the purpose of having some one always there to make representations, which will bring about harmonious action between the two Boards?—Yes.

4120. Sir *G. Bowyer.*] Might it not be one, with power to the Board, in case that person could not attend, to appoint a substitute?—No, I think not; I cannot see why, with a Board so constituted, there should not be another.

4121. Colonel *Gilpin.*] It would not be necessary to have your member there upon every occasion?—No; at the same time one would not be reasonable enough; there are three at our Board from the City; I give the best reasons I can for having two; two would support each other, instead of one man being left alone in a large body; I cannot see any difficulty in it; if it is a question of money, as you are to have 5,000 *l.* a year from the water companies, besides 1,400 *l.* a year which they at present pay, I think the allowance for attendance might be increased.

4122. Lord *Eustace Cecil.*] The water companies are not asking for representation?—I shall have to ask you for it presently.

4123. Mr. *Wilkinson.*] I believe I may state that you have a considerable interest in some of the water companies, have you not?—I am a director of the West Middlesex, and I have been a shareholder from the first.

4124. I believe it is owing to your intervention that the arrangement with the water companies has been carried out during the progress of this investigation?—It has been a little owing to my assistance, and the influence which I have brought to bear upon it, although I did not think it very just; I thought it a matter of so much public interest that we might contribute towards it; I broached it to the chairman, who was kind enough to assist us with his good offices, and we were able to bring it about.

4125. *Chairman.*] Should you have any objection, upon the principle that you have interests in common, as it were, to admit a representative of the Conservators on the Metropolitan Board?—Oh, dear, no; none in the world; if there is any convenience in it, which there might be probably, I have no objection to that.

4126. For the same reason?—It is perfectly fair, only we are not paid; we get nothing by it; there might be great disinclination on the part of the Conservators to spend the time that I sometimes spend upon that Board for nothing.

4127. Mr. *Wilkinson.*] Does the allowance of 1,200 *l.* a year present any obstacles to the addition of the representatives of the Metropolitan Board of Works to the Conservancy Board?—Not at all; there was a good deal of difficulty in the House of Commons as to paying them at all: I think my name is on the back of one of the Bills; I do not see why that 1,200 *l.* should not be increased to 1,500 *l.*, because you have 6,400 *l.* from the water companies; you will have 5,000 *l.* added to the 1,400 *l.* which they pay now; I do not see any difficulty in taking 300 *l.* out of that.

4128. And increasing the 1,200 *l.* to 1,500 *l.*?—Yes.

Cross-examined by Mr. *Clerk*.

4129. The ratepayers of the metropolis, as such, contribute nothing to the Conservancy Fund?—No, not in direct rating; but they do, of course, in a variety of ways; for instance, if you want to embank down the river, you cannot do it without the consent of the Conservators.

4130. They would not pay it as ratepayers, but as a consideration for the permanent benefit they would get if the embankment is made?—Yes.

4131. You say you would advocate representation for the water companies?—I should not object to it.

4132. Do you advocate also that the different towns higher up, above London, should have representation upon that Board?—That is a question I am unable to answer; if they pay I think they ought to have the means of representing themselves, but if they do not, I do not see what business they have there.

4133. You pay nothing?—We pay incidentally, although not directly.

4134. How?—In the way I have explained.

4135. That is to say, if a person who is resident on the banks of the river wants to have some works made he pays for it?—Yes.

4136. That is what you call payment by the metropolis?—It is a payment by those who pay rates; with regard to the question of those above, I know nothing at all about that.

4137. With regard to the position of the Corporation of London, you seem to think that it is a hardship that the Corporation of London should have members at the Conservancy Board, and that your body should not?—I do not think it is a hardship at all; I think it is perfectly reasonable that they being drawn from the Corporation of London, should be so constituted; if they undertake the working of it with their officers, I think that is reasonable and right; I have no objection to that, but I think at the same time that it is quite reasonable and right that another corporation which has so much to do with the river and all that belongs to it, should be also represented.

4138. You know the principle on which the Corporation of London are represented on the Conservancy Board?—No, I do not.

4139. Have you never read the Report of the Select Committee which states that, "In 1857 they surrendered part of it in a liberal spirit of peace and concession. To displace the Corporation of London from a council where they had long been paramount and were always predominant, where their conduct too had been marked by moderation, would be an injurious if not an inequitable act." That is the principle on which the Corporation of London were allowed seats as members of the Conservancy Board?—Yes.

4140. They are not representative members?—They are not; they are nominated.

4141. Your claim is on the part of the metropolis generally, to send representatives to this Board?—I do not quite see that myself; I say they are nominated from their body; they are constituted by nomination.

4142. I understand your view to be that you are to come in to represent the ratepayers of the metropolis; is not that so?—I think we have a right to represent the metropolis over which we have so large a control; don't mix up the ratepayers with it.

4143. Your chairman dwelt upon the fact that he was representing three millions of ratepayers of the metropolis?—So we are.

4144. If I understand your argument, it is this, that if two sensible men sit on the Conservancy Board that prevents all such discussions as have arisen in this case with regard to dredging and so forth, which could be got rid of by means of deputations at the present time?—It would go far to prevent it; I do not know that it would prevent it.

4145. You think that one sensible man, or two sensible men sitting there, would be able to change the views of the majority of the Conservancy Board, where a large deputation, by merely expressing your views, would be unable to do so?—Our deputation succeeded; your inference is a very unfair one altogether; the three members of the Corporation of London in our Board of 45 have influence enough.

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4146. I am not talking now of the Corporation of London?—I was adducing that as an analogy.

4147. *Chairman.*] I think the Committee understand the argument. Mr. Tite says there are certain interests in common between the Conservators and the Metropolitan Board of Works, and he thinks on that account that the Metropolitan Board of Works should have some representation upon the Conservancy Board, and that they might work together; is not that the sum total of your argument?—That is exactly it.

4148. Mr. *Clerk.*] What interest is there in common?—The river is common to both, and we are making large works.

4149. What is the interest which is common to the two Boards?—I cannot explain it further than this, that if the river passes down through the whole of the district, and the two Boards have the control, one of one portion, and the other of the other, I cannot see any inconsistency in the Metropolitan Board of Works having a nomination of two to look after their interests.

4150. What control have you over any portion of the river?—Over the river itself.

4151. Yes?—We have a considerable control given us by our Acts of Parliament.

4152. What?—We are constructing the Embankment, we are pouring off the outfall water of such a flood as happened last night into the Thames.

4153. That gives you no control over the river?—Does it not? Then what is it?

4154. You are constructing the Embankment under the control of the Conservators?—Not so; it is pointed out in the clause in the Act of Parliament what we are to do; we have not to consult them about it.

4155. That is the very thing you are complaining of; Mr. Bazalgette says he consulted the engineer of the Conservators?—Of course on many points he must, there is no doubt about that.

4156. I want you to tell me in what sense you are responsible for anything connected with the River Thames; it has been stated very boldly three or four times that you are responsible for the purity of the River Thames; in what sense are you responsible for the purity of the River Thames?—I think we are obviously; one of the strongest duties we have to perform is to purify the River Thames, and if, when this Bill passes, the Conservators will proceed to do everything they can with the Upper Thames, as we have done with the Lower Thames, we have a very direct interest in that.

4157. Have you ever had any other work to do with reference to the Thames, except the construction of the main drainage works, to prevent the sewage going into the Thames?—I do not understand your question; we are authorised by Parliament especially to protect the interests of the public, in all that relates to the public interest, through the whole district.

4158. I am talking about the Thames?—I mean as regards the Thames.

4159. You say that you are responsible for the purity of the Thames?—Yes.

4160. Have you ever had, or have you now, any authority with reference to the Thames, except that you are to construct the main drainage to prevent the sewage going into the Thames?—But do you think our duties end there?

4161. With reference to the purity of the Thames, have you any other?—We have no legal powers, but we have a duty, and that duty we shall carry out by every means in our power.

4162. Have you any other duty except to construct works to prevent sewage going into the Thames?—If we can help to carry it out, is it not our duty to prevent the sewage of Kingston coming into the Thames?

4163. If you ask me, I should say certainly not, because it is beyond your jurisdiction?—I think we have.

4164. Your jurisdiction goes up to Putney, I think?—We have a moral duty, I apprehend, if we can, to help in purifying the Thames above our limits.

4165. Will you just come to this question; it has been stated by your Counsel, over and over again, that you are responsible for the purity of the Thames; I want to see whether that is an intelligible proposition; I want to know if you can tell me any other duty that you have with reference to the purity of the Thames than to prevent the metropolitan sewage from going into it every year?—Yes.

4166. What

4166. What is it?—A moral duty.

4167. That is not contained in the Act of Parliament?—It is not; I told you we have no legal power, but I think we shall get it.

Re-examined by Mr. *Wilkinson.*

4168. Are you aware that at Millbank, which is close by, in consequence of the Thames Embankment, the river will be widened at one point, and at another point be narrowed?—It will.

4169. That will be a point affecting the navigation?—Yes.

4170. That will be a point on which your control of the river must conflict with the Conservators?—Yes.

4171. Then, with regard to the representative principle, of course the aldermen and common councilmen are elected just as the Board of Works are elected by the ratepayers?—They are, except that the Court of Aldermen are permanent, and we are elected triennially.

4172. Now, with regard to the application of 1864, as to which my learned friend was so obliging as to read the Report, which was the result of a compromise between the Crown and the Corporation, was it not?—Yes.

4173. The alteration of the Board was the result of that compromise?—Yes; the fact is, the management of the Corporation became somewhat ridiculous; their expeditions to Oxford and Rochester showed that they spent a good deal of money, not amongst themselves, but in eating and drinking; I have dined at those dinners and I never had better dinners in my life; they spent in eating and drinking what I hope the present gentlemen will reserve for themselves.

4174. Is not now a more fitting opportunity to come to the Committee to ask for the introduction of the Metropolitan Board upon the Board of Conservancy than in 1864?—Well, I think so; it is a very reasonable time to ask it.

4175. Mr. *Neate.*] Assuming that the House of Commons, or rather, the Committee, was right in rejecting the claim of the Metropolitan Board of Works to representation, do you think that they have now any special ground for claiming seats at the Conservancy Board with reference to the Upper Thames?—I think that was wrong.

4176. I am assuming that that is right; can you point out any special reason which exists now why they should have seats at the Conservancy Board?—Yes; I think there is this special reason that you are considering the whole question; you are taking the whole matter in hand, which affects us very closely; how the Committee came to the conclusion they did I do not know; it is not for me to question the wisdom of their decision; I think the present occasion is a new one when the national object of purifying the Thames is being taken into account, and that is a question on which I think the representatives of 3,000,000 of people have the right to have a slight say.

Mr. *Wilkinson* stated that that closed the case on behalf of the Metropolitan Board of Works.

The room was ordered to be cleared.

After a short time, the Counsel and parties were called in.

Sir *G. Bowyer* (who had succeeded Mr. Gibson in the Chair) stated that the Committee had decided upon reserving the question as to the representation of the Metropolitan Board of Works, and would not come to any decision at present.

Mr. *Clerk* then addressed the Committee on behalf of the Conservators of the Thames.

Captain *Edward Burstal*, R.N., called; Examined by Mr. *Clerk.*

4177. You are a Captain in the Royal Navy?—Yes.

4178. You are, I believe, Secretary to the Conservators of the River Thames?—I am.

4179. Have you been so now for a good many years?—Eight years.

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4180. Your present constitution was established in 1864?—Yes, by the Act of 1864.

4181. As the Committee have heard, there were certain representative members introduced in addition to the old constituted body?—Yes.

4182. Has that body worked harmoniously since 1864?—Yes, quite.

4183. The civic element in your Board consisted of the remnant of the old Conservancy Board?—It was turned over from the Corporation in 1857 to our present Board.

4184. Prior to that, they were themselves as the Corporation, the Conservators?—The Corporation had it entirely in their own hands.

4185. And a small proportion of the civic element has been retained, in consideration of their having been formerly the sole Conservators?—Yes; that was the agreement between the Crown and the Corporation.

4186. There had been a long litigation between the Crown and the Corporation with regard to the ownership of the soil of the river, which was compromised in 1857?—Yes; there was a certain number of members of the Corporation on the Board.

4187. Under your present jurisdiction, you have powers over the Upper Navigation as far as Staines?—Yes, that is the western limit.

4188. From Teddington up to Staines you have a navigation similar in character to that of the upper part of the river?—Very nearly, precisely the same; there is but a little difference, that would arise from the arrangements of the mills.

4189. You have some weirs, towing paths, locks, and dredging necessary?—Precisely the same duties.

4190. Therefore, the Board, as at present constituted, and their officers, are quite familiar with this sort of work which will be thrown upon them if this Bill were to pass?—No doubt, but they will have the same duties to do, only they will be extended.

4191. I believe your Board as constituted at present are quite willing, and feel themselves competent, to undertake those duties?—They are quite willing to undertake them on fair terms.

4192. The question of funds is a matter pretty nearly settled, and disposed of at the present time?—Yes, it has put them in a position of doing some work, whereas, without that they would be helpless.

4193. Your present funds are principally raised on the Lower Navigation from tolls and licenses paid for, are they not?—There are several sources; first, there are the tonnage dues on the shipping; then there are the tolls on barges; then there are the licenses for accommodation on the river; then there are small contributions paid by the water companies, and there are two canal companies that pay a composition for their tolls.

4194. Can you state what the amount of the income of the Lower Navigation is?—The total income I think is about 40,000 *l.* a year.

4195. Does that include the Lower and the Upper part of the Navigation?—That includes it all; it is all one fund under the Act of 1857.

4196. Have you any surplus after paying expenses?—No; the expenses are about equal to the funds, as near as possible.

4197. Mr. *Acland.*] Have you any permanent property besides?—No.

4198. Mr. *Clerk.*] Is a portion of that 40,000 *l.* paid over to the Crown?—There is one-third of the rents which are received from people who have accommodation on the river, such as piles, jetties, and so on, which is paid to the Crown.

4199. Then the 40,000 *l.* represents the balance?—Yes.

4200. There is but one fund for the Upper and the Lower Navigation?—It is all one fund.

4201. The accounts are kept distinct, are they not?—No, they are all one set of accounts.

4202. You say the expenses are very nearly equal to the receipts?—Yes.

4203. By the "Upper Navigation," of course I mean from Staines downwards?—Yes.

4204. Is there a debt?—There was a debt of 130,000 *l.* to bondholders, which is being gradually paid off.

4205. What is due at the present time?—About 120,000 *l.*

4206. What do you take it at—four per cent?—Three-and-a-half per cent.

4207. You

4207. You state your revenue is now 40,000 *l.*, and that you have 120,000 *l.* of debt at the present time, and it has been reduced to that from a larger sum, and that the rate of interest is three and a half per cent. ?—Yes.

4208. And that that, with your expenses of maintenance, absorbs your present income ?—Yes, the expenditure and receipts are as near as possible equal.

4209. Mr. *Peel.*] How much debt has been paid off ?—I think about 10,000 *l.*

4210. Mr. *Clerk.*] Your accounts are printed annually and laid before Parliament, are they not ?—Yes.

4211. Now, with regard to the composition of your present body, I do not propose to ask you any question as to that; but you are ready to explain that if any Honourable Member wishes to examine you upon that subject ?—I shall have no difficulty in that at all.

4212. One word with regard to the constitution of the Board; the original constitution is by the Act of 1857 ?—Yes.

4213. The Lord Mayor for the time being is one of the Conservators ?—Yes.

4214. Two others are Aldermen of the City, and four are to be Common Councilmen of the City; and they represent the whole City element ?—Yes.

4215. One of the Conservators is the Deputy Master of the Trinity House for the time being; two others are to be appointed by the Lord High Admiral of the United Kingdom ?—Yes.

4216. Who are the gentlemen now representing the Board of Admiralty ?—Admiral Sir Frederick Nicholson is one, and Admiral Ommanney is the other.

4217. There is another appointed by the Lords of the Committee of Privy Council ?—Yes.

4218. Who is he ?—Captain Baker.

4219. One other is appointed by the Trinity House ?—He is one of the Elder Brethren of the Trinity House, Captain Owen.

4220. Since that, in 1864, there were six representative members added to the constitution, making the number 18 ?—Yes.

4221. Two are elected by the owners of shipping registered in the Port of London ?—Yes.

4222. Who are they ?—Captain Hunter and Captain Hight.

4223. Mr. *Acland.*] What are they captains of ?—Captains in the merchant service.

4224. Mr. *Clerk.*] One member is to be elected by the owners of steamers certified as passenger steamers, and plying on the River Thames not seaward of Gravesend; who are they ?—Mr. Jennings.

4225. Who is Mr. Jennings; is he a commercial man, or a practical man, or what is he ?—He is a director of one of the steam-boat companies, and he is something in Doctors Commons.

4226. Mr. *Phinn.*] He is a proctor, is he not ?—Yes.

4227. Mr. *Clerk.*] Then do the owners of lighters and steam-tugs elect two ?—Yes.

4228. Who are they ?—Mr. Pilan is one, and Mr. Samuel Williams is the other.

4229. Mr. *Acland.*] What are those gentlemen ?—They are the owners of lighters and steam-tugs, and they must be that in order to conform with the Act of Parliament.

4230. That qualification is necessary ?—Yes.

4231. Mr. *Clerk.*] Do the occupiers of docks, legal quays, and sufferance wharves also elect one ?—Yes.

4232. Who is that gentleman ?—Mr. Elmsley.

4233. Mr. *Acland.*] When do these elections take place ?—Once a year.

4234. Are the same gentlemen generally elected ?—There have been only two elections, and the same gentlemen were elected the second year as were elected at first.

4235. How often do they meet;—Every Monday for Board meetings, and Friday for committee meetings, and the first Monday in the month for finance committee meetings.

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4236. Mr. *Clerk*.] In addition to the Board meetings?—Yes.

4237. Mr. *Acland*.] What proportion of members attend?—I should think out of the Board of 18, the average attendance is 15; quite that.

4238. What element of the Board is principally represented there; do they all come?—Yes; it is just a matter of chance who happens to be away.

4239. Do the representative members attend as much as the civic members, and the civic members as much as the representative members?—There is not much difference; they are all regular in their attendance.

4240. Do the civic members and the official members take as much interest as the others in the discussions?—I am quite sure of this, that every member of that Board works with one common object, and that is, the public weal, nothing less; there is no party feeling.

4241. An idea prevailed that the body was not a unanimous body, but that it was an inharmonious and discordant body; is that your opinion?—I do not know how that could have originated; it must have originated in a great mistake.

4242. At all events, that is not so?—No; the only difference is now having 18 members on the Board instead of 12; there is more talking, and I do not think a bit more work done.

4243. None from your experience of that body; supposing Parliament should throw upon them the obligation of taking charge of the upper part of the river, do you think the present body are a sufficient number to discharge those duties efficiently?—I have no doubt as far as numbers are concerned there are quite enough to do the work.

4244. I do not know whether you have considered the question of the advisability of having certain representatives from the Metropolitan Board of Works on your Board?—If the Metropolitan Board of Works add anything to their duties which Parliament has already devolved upon them, such as the management of the navigation of the river, the management of the harbour-master, the laying down of moorings, and such duties as that, which are to a great extent nautical questions, I then say that there is some reason in it; but I cannot say with regard to the ratepayers of the metropolis, as ratepayers only who do not subscribe a penny towards the funds, and cannot be interested in anything except simply the purity of water, what necessity there is for having a member of the Metropolitan Board of Works upon the Conservancy Board to be of any use in their discussions; that is what I mean, to be of any use.

4245. At the present time, when there is any question affecting the interests of the two bodies, do you find that there is any difficulty in appreciating the views of the Metropolitan Board of Works with regard to any matter?—I must confess that I was very much surprised indeed to hear so much made about all these discussions and their differences, and so on; we have never had any communication with the Metropolitan Board of Works during the eight or nine years that I have been there, except certainly upon two or three subjects; the principal one, which has caused so much correspondence, has been the affair of the supply of material for filling up the Thames Embankment; I do not think I am over stating it, when I say that all the other discussions have been three or four for the approval of the Board, to certain plans for sewer outlets, which approval is required by Parliament; there is nothing more that I know of; there has been very little correspondence with the Metropolitan Board of Works of any description.

4246. That particular matter had ultimately to go to the arbitration of the Board of Trade?—Yes.

4247. Supposing the representatives of the Metropolitan Board of Works had been on your Board, would the same result have followed?—The thing arose in this way.

4248. I do not want to go into details?—Then I had better give a direct answer to your question; I cannot see how, if two or three members of the Metropolitan Board of Works had been upon our Board, they could have given any opinion or could have advanced any argument which would have prevented that correspondence, which is on the table, between our Board and the Metropolitan Board of Works on the subject; you see it was a question entirely as to whether they were willing to take the stuff from our dredgers.

4249. Whatever it was it would have resulted in arbitration, whether there

there had been members of the Metropolitan Board of Works present or not?—I should think so.

4250. At the majority of your meetings are the works discussed connected simply with the interests of the navigation?—I do not quite understand you.

4251. At the majority of your meetings would any matter be discussed which would bear in the slightest degree upon the questions affecting the Metropolitan Board of Works?—No, nothing at all.

4252. It would be very occasional when any such matters would arise?—The only thing is, that if a Bill comes before Parliament like the Thames Embankment, or the Chelsea Embankment, whatever it is that comes before them is treated in the same way as any other Parliamentary Bill.

4253. In short, if any other public work was brought forward at all affecting the foreshore of the River Thames your consent or approval of it would be required by Parliament?—Yes, always.

4254. And in that respect the Metropolitan Board of Works are exactly in the same position as any contractor is, whether public or otherwise?—Precisely the same; with respect to bridges the Metropolitan Board of Works interfere in this way: they require the bridges to be 40 feet wide, or something of that sort, and the Conservators require the arches to be made of a peculiar form, which is best suited for the navigation, and the foundations to be of a sufficient character to admit of the river being dredged at some future time deep enough for the improvement of the navigation.

4255. The authority of the Metropolitan Board of Works is entirely as to the roadway?—Yes.

4256. They have nothing to do with the navigation?—The Conservancy Board settles all questions with reference to the navigation.

Cross-examined by Mr. *Phinn*.

4257. I am not going to interfere in the quarrel between the Metropolitan Board of Works and the Conservators; that is a point they must settle between themselves, because I have nothing to do with it; I believe originally the Board were not paid, Captain Burstal?—The Board were not paid.

4258. When the Board of Trade brought in the Act of 1864, a proposal was made that you should be paid at the rate of 1,200 *l.* a year?—Yes.

4259. I think the proposal was 1,500 *l.*, was it not, originally?—I think it was 1,500 *l.* originally, but it was reduced to 1,200 *l.*

4260. There was some little difficulty about it, but the analogy of the Trinity House was brought in?—The Elder Brethren of the Trinity House are paid.

4261. The Elder Brethren of the Trinity House are paid much more handsomely than the other members of the Conservancy Board?—Yes.

4262. I believe the payment which is made is 100 *l.* each month, which is divided according to the attendances?—That is it.

4263. There has been some question of raising the emoluments, has there not?—When?

4264. Has there been no question of that sort lately?—Do you mean by lately, in this Bill.

4265. No, *dehors* this Bill, as we lawyers would say?—No, I think not.

4266. How often do you attend in the week; how many meeting are there a week?—The Board meets on Mondays at 11 o'clock, and on Fridays, and very often one day more a week, to go on the river, or hold views as to any embankment or erection.

4267. Are there committee meetings besides?—The Friday meetings is a committee meeting, and there is an additional committee meeting on the first Monday of every month for finance purposes.

4268. Are the payments in respect of attendances at the Board meetings distributed over the attendances at the Board meetings and committee meetings too?—The Board meetings.

4269. The attendances on committees do not reckon?—No.

4270. I will not ask you what the members get, because that would be invidious?—I could not answer that without the books.

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4271. I will pass that; what are the general proportions with reference to this Bill; you were originally 12, as we know?—Yes.

4272. Do you think that the infusion of six has given you any peculiar or special character which you had not before?—No; I do not think it has.

4273. Have you had from the infusion of these six representative members any grievances brought to light which you did not know of before?—None whatever; there have been no complaints whatever before the Act of 1864; there were a great many people on the banks of the river who wanted to have representation; they thought that as they had barges on the river, and as they had water-side premises on the river and so on, that they were so directly interested in the working of the Board that they should have a seat at the Board, and Parliament granted it.

4274. I dare say you, as secretary, can tell us what the representation is; for instance, what is the constituency who return the gentleman who represents the river steamers?—Twelve in number, I think.

4275. Then 12 proprietors of river steamers have a representative?—Yes.

4276. Sir *G. Bowyer*.] Two have not?—Only one.

4277. Mr. *Phinn*.] What is the interest of the river steamer proprietors that requires this peculiar protection; you take tolls at piers, I think:—Exactly; those tolls are as low as they possibly can be; they do not even pay their way.

4278. Do they not pay their way?—No; did you mean to ask me whether the steamers paid their way?

4279. No; whether the expenditure that is incurred with reference to the accommodation of the steamers is recouped by the tolls you levy from the steamers?—It is not.

4280. So, then, you have a representative of 12 persons who are really not taxed, because they get more than they pay?—That is so.

4281. Now let us go to the barges; you have two representatives of the barge-owners?—Yes.

4282. What is the constituency of the barge owners?—They are a large number.

4283. Can you tell the number?—I think 800 or 900.

4284. Are they owners of lighters and steam tugs?—Yes.

4285. Here is a register of the owners of lighters and steam tugs (*handing the same to the Committee*); what special interest have they?—They are interested so far as this, that they have business to transact on the river, and their vessels float up and down the river carrying on trade on the river; I have no doubt they are interested in the well-being of the river, but a money interest there is none.

4286. Do you not levy tolls on them?—No.

4287. You are guardians, are you not, of their special privileges under the Waterman's Act?—No; we are not guardians of those privileges, they have an act of their own.

4288. You have nothing to do with the administration of the Waterman's Act?—Nothing at all.

4289. They are not taxed then?—No, the watermen are not.

4290. You have power to levy tolls for mooring?—Yes.

4291. If they use moorings, they pay for them?—No, we have never levied anything on them; power was given by the Act of 1864, but it was never exercised.

4292. Of the represented body, who do you tax?—The shipping interest; the shipping bodies paid the tonnage dues, and of course that is a large proportion of our income.

4293. Then they are represented in the proportion of two to six?—Yes.

4294. Two of the six contribute the greatest proportion of the taxation, and two out of the six contribute nothing?—That is true; the passenger steamers of course contribute so much; they pay tolls.

4295. I do not know whether you have looked at Mr. Thorpe's evidence, which he gave before the Commission last year?—Yes.

4296. Do you concur with the views which he expressed?—Yes, I think so, generally.

4297. You have no doubt that if Parliament devolves this duty upon you, that you are perfectly competent to undertake it?—Yes; the duties would merely be similar to what are done now with very little modification and very little alteration.

4298. Do you believe, if you had the fixing of through rates from the estuary to

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to the furthest point of the navigation, that you could manage that with reference to the circumstances of the general interests of the river?—Through rates for barges, you mean.

4299. Yes?—I should think so; I do not see that there would be any trouble about that at all; we do it in our district without reference to any local interest.

4300. Do you know any point on this river where you could draw a bar across, so as to divide the interests of those above the river from the interests of those below?—No, I do not think I could; I think that they are all similar, excepting these interests, the shipping interests, and so on, for the sea-going ships; where you have to lay the moorings down you have to appoint a harbour-master and boats' crews for that work; it is a different kind of interest from the interest up the river.

4301. When you once get above bridge, the interest, with reference to the navigation, is identical?—Yes.

4302. You had six added to the 12; do you see any objection to adding another six, making 24?—I do not want to see a larger Board than there is now.

4303. Increasing their pay a little?—I have nothing to do with that; I really think that is a sort of question which the Conservators themselves ought to answer, and not their secretary.

4304. From your experience, do you not think that 24 people can manage this perfectly?—I should think they could, indeed; if 24 cannot do it, 100 cannot.

4305. We propose to add three; suppose it seemeth good to the Committee to add three more, do you not think that those 24 gentlemen, looking at the variety of their experience, could manage this thing perfectly well?—I should think they could.

4306. You have had litigation with the town of Kingston, have you not?—Yes.

4307. You came too soon, as the Vice-Chancellor said, to prevent them pouring their sewage into the river; that case is under appeal now?—Yes.

4308. Do you not think it would be very desirable that the power of restraining the pouring of sewage into the river should be committed to your Board?—I think, whoever has it, it should be all one Board, the same officers and the same plant that does the work; it should be done more economically than dividing it into two or three different Boards.

Mr. *Acland.*] Might I ask whether the principle of working by committees or sub-committees, with reference to distinct points, might not be carried further.

Mr. *Phinn.*] There are provisions in the Metropolitan Board of Works Act 1861, giving power to the committees of the Metropolitan Board of Works to do certain things.

4309. To the *Witness.*] Your Act of Parliament is on the same model, I believe?—Yes.

4310. Mr. *Acland.*] Do you, in point of fact, appoint committees for some portions of your work?—We appoint a General Purposes Committee; if a question comes before the Board at the Board meeting on Monday, which requires sifting and examining into, that is referred to the General Purposes Committee to inquire into if necessary; and the harbour master or engineer, in the meantime, that is, between the Monday and Friday, examines into the subject and makes a report, which is read to the committee on Friday; and then it very frequently happens that the committee, not being satisfied with the report of their officer, go themselves to the spot and look at the subject, and hear the neighbours and so on, and decide for themselves.

4311. Do you not think, if you undertook the whole of the Thames, that you must appoint sub-committees to do some part of that work?—I think that is not at all unlikely.

4312. Would not that remove the great objection to the increase of your number to 24?—The 24 must be all members of the Board.

4313. Lord *Eustace Cecil.*] Suppose the Metropolitan Board of Works were

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actuated by a feeling of hostility to you, could they injure you in any way in matters relating to navigation and purifying the river?—Oh, dear, no.

4314. They could not?—No.

4315. Mr. *Phinn.*] The Honourable Member for North Devon has been good enough to ask you with reference to committees; I believe you work by committees under the 23d, 34th, and 35th sections of the Act of 1857?—I think that is it.

4316. Do those provisions provide sufficiently for anything you would require by way of diligence?—Yes; if the Board wanted more committees for special subjects, they have power to appoint them by that Act of Parliament.

4317. Do you see, for instance, whether Reading or Oxford, or any town of that kind, has any special interest which would require it to send a member?—I do not think they have any individual interest; that is to say, I mean they have no more than that interest that a person would naturally have who lives in the neighbourhood; all the landowners must be interested in the manner that it passes through their property.

4318. Now, take Gravesend; you have, I suppose, to provide moorings, and so on, as low down as Gravesend?—We have a large number of moorings at Gravesend.

4319. I suppose the prosperity of Gravesend depends a good deal upon how many vessels there are communicating with the town, and so on?—I am rather of opinion that the people who are to be governed ought not to be masters.

4320. You do not see the necessity of putting a bell upon the cat?—No.

4321. For instance, Gravesend has no special representative?—I do not see the interest that Gravesend has to be represented, or to care about representation.

4322. Then there are Deptford, Woolwich, and Greenwich?—If a man wants a dolphin, or a gridiron, whether he be a resident at Greenwich or Gravesend, it does not matter, the Board pay him just as much attention as if he were living in London.

4323. Although he has not a special representative at the Board?—Yes; each individual member of the Board, as I said before, acts for the public benefit; it does not matter who he is, or where he lives.

4324. Sir *G. Bowyer.*] I suppose you do not find your Board at all too numerous, having regard to the amount of work that you have to do?—The Board refer a subject to the committee, and then the committee report to the Board again; it does not require great numbers to do that.

4325. That is not what I mean. I mean, having regard to all the work that the Board has to do, whether by means of committees or otherwise, do you find the number of the Board now more than adequate for the performance of the work?—It is more than is actually necessary; when we worked with 12 we got through the work just as well as before; the only difference that it makes is that we have 18 gentlemen sitting at the table instead of 21.

4326. Suppose you had all the work of the Upper Navigation, you want no addition to your numbers?—That is a question which the members of the Board who will have the management of this by-and-by ought to answer better than I can; if they make a report on the Upper Navigation, probably two or three members, for the purpose of considering those reports specially, would not be unobjectionable.

4327. There would be a great deal more work when there is the Upper Navigation brought under your management?—No doubt.

4328. Therefore, you will probably consider it convenient that there should be an addition to their number?—If the Board considered it desirable, this Upper Navigation Committee.

4329. Whether they have the Upper Navigation Committee or not, I say if that work of the Upper Navigation cannot be carried on, it would render it convenient that an addition should be made to the present number of the Board?—The work the Board has to do cannot be so well subdivided as it is in this way; that supposing there are 18 or 20 members on that Board, and probably they may have half as much more to do it, the result will be that they will have to remain unoccupied an hour and a-half or two hours at the Board.

4330. I want to know whether the increasing traffic would not make it desirable that there should be an increase in the number to do that work?—That is what I was endeavouring to explain; suppose you have 18 on the Board now, there are, we will say, 50 subjects brought before those 18 gentlemen; if you

you increase the jurisdiction, the number of subjects that are brought befor that Board is raised up from 20 to 70; an increased number of the Board will not diminish the work, but the effect of it would be that these gentlemen will have to remain so much longer to attend to the 70 subjects than they did when they had to attend to 50 subjects; that is the way it would be different.

4331. Mr. *Acland.*] I am assuming that all the members attend equally to every subject?—A great many do.

4332. That is rather a strong assumption, is it not?—Nearly all the Board at present remain till the work is over.

Cross-examined by Mr. *Wilkinson.*

4333. You told my learned friend in your examination in chief, that as far as the Corporation are represented upon your Board, that was a concession to their ancient right?—Yes,

4334. And the result of a compromise between them and the Crown?—Yes.

4335. Independently of the agreement with regard to ancient rights, do you think it desirable, or in your judgment proper, that the Corporation should have so large a representation as seven out of 18?—I am not in a position to answer such questions as that; it is not in my province to deal with that at all; I have studiously avoided making any comments as to who they shall be with reference to one or the other; but I think myself this, that considering the Corporation of London, as a whole, had the Conservancy of the river in their own hands, that six members, besides the Lord Mayor, who were put on the Board by the Act of 1857, when it was a solemn compact between them and the Crown, I think that is nothing but fair.

4336. So far as the compact is concerned, you think that the compact should be preserved?—Yes.

4337. But with regard to the expediency of the Corporation having so large a proportion on the Board, you declined to give any opinion?—I do not see why they should not.

4338. Do you see why they should?—I must beg to be excused from making any comments on that subject; you were asking some question as to whether one or two of the Admiralty representatives should be on the Board.

4339. I understand you now to say that you see no reason why there should, but you decline to express an opinion why they should?—As I said before, the gentlemen at that Board have all this extra work suddenly thrown upon them; I do not see any reason whatever for altering the constitution of the Board by taking any member off.

4340. But still I must ask you, and I must press the question to you, and of course you must answer it or not as you please; do you see any reason, irrespective of that compact, why the Corporation of London should have so large a representation on that Board?—They represent a large and commercial interest, which is a very important interest; they are men who have had a great deal of experience of those matters, and they form very excellent members on the Board; and therefore, I say myself, that the Corporation gentlemen on that Board have done their work as well as any one.

4341. I did not ask you that question; I ask you, and I repeat it, admitting all you say, do you think it just, apart from the compact made with the Government, that the Corporation of London should have so large a share in the representation?—I have declined to answer that question.

4342. Then I will not press the question?—I decline to answer any question whatever as to the constitution of the Board; I said just now that I thought that was a question which ought to be got from the members of the Board, rather than from their Secretary.

4343. You answered my question with regard to the proposed introduction to the Board of these other persons, and therefore I have a right to ask you these questions; besides the three members of the Corporation, you have six other members elected by the owners of shipping, steamers, lighters, steam-tugs, and occupiers of docks?—Yes.

4344. That gives you 13 out of 18 upon that Board, as representatives of the commercial interests of London?—Yes.

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4345. Now, do you think it is right, that upon a Board of 18, there should be so large a proportion as 13 representing the commercial interests alone?—Yes, I do not see why there should not.

4346. I find among your constituent body, 12 proprietors of river steamers elect one member?—That is a matter of the constitution of the Board again.

4347. You decline on the same principle to express your opinion as to whether or not that is desirable?—Parliament has appointed them.

4348. I do not press you?—I would rather not have anything whatever to say upon those subjects.

4349. On what principle is it that you tell me you cannot understand why all these ratepayers who are only interested in the purity of the water should be represented, when you allow 12 proprietors of river steamboats to be electors?—But then you must understand this, that these people who are on the Board now have a direct interest in the management of the river, for they have business on the river; their vessels float up and down the river, their wharves are on the banks of the river; but when was I asked the question about the additional members for the Metropolitan Board of Works, what I said was this, that the interests they represented had nothing whatever to do with the work upon the river.

4350. I am coming to that, but still answer my question, if you please, and if you will; do you think that the principles on which you defend your representation are just that the parties interested, as you say, in the purity of the water should not be represented on a Board which admits among its members the representatives of 12 proprietors of river steamers, and do you think the interests of the two are at all to be compared in point of magnitude of interest to that of the parties consuming the water on the River Thames who are interested in its purity and who are not represented on your Board?—That is the only reason they have for coming on the Board, in order that they may get clean water.

4351. Do you think that the interests of all those who consume the water and who, of course, are concerned that it should be kept pure, have not the same right to be represented as the interests of 12 steamboat proprietors?—If it were a Board which had nothing to do but to look after the river and to get clean water, then I should say that they have, but inasmuch as they have a vast number of other duties to perform quite irrespective of that, then I say that it is not fair.

4352. Then you think the Board of Works have too many duties to discharge, and you think that their other duties would not entitle them to be placed on your Board?—That is it.

4353. So far as the Metropolitan Board of Works are interested in maintaining the purity of water only, if that were their only duty, you do think them entitled to a seat on your Board?—If that was their only duty, I think so.

4354. One reason why you think the Board of Works would not be entitled to a seat on the representation is that they have nothing to do with the management of the navigation?—Yes.

4355. During the formation of the Embankment, have not alterations in the bed of the river been necessary which affect the navigation, materially widening one part and narrowing another part, bringing this out and shutting in that?—The Thames Embankment has no more to do with the navigation of the River Thames than if it were at Liverpool; it is this, that by the Embankment they take away a great quantity of tidal water, and we seek to compensate for that as much as possible by dredging the bed of the river so as to compensate for that loss, but as far as the navigation or anything of that sort is concerned ——

4356. You seek to compensate for that loss by dredging?—Yes.

4357. Would not the navigation be affected if you did not seek to compensate for that loss by dredging?—No; what I mean to say is this, that we hope that by taking away the dredging of the river we compensate to some extent for the loss of tidal water.

4358. Of course, the operations for the Thames Embankment do not affect the bed of the river?—No, the Embankment itself does not affect the bed of the river; what I mean is this, that the Embankment fills up a large portion of what was tidal water, before the Embankment was so made.

4359. In so doing, does that not affect the navigation of the river?—No.

4360. Then that operation of filling up makes it necessary for you to do it?—It makes it desirable as much as possible that the filling-in material should be taken

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aken from the bed of the river, in order to compensate for the loss of the tidal water way.

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4361. What do you dredge in consequence of our filling up the channel?—To compensate for the loss of the tidal water, which is filled up by the embankment.

4362. Compensate in what way, for the benefit of the navigation?—Of the river generally.

4363. You say you have had no communication with the Metropolitan Board of Works during some eight or nine years, except on two or three subjects?—That is all.

4364. You are aware, are you not, that the duties which would bring your Board into, I will not say conflict, but correspondence with the Metropolitan Board of Works are only comparatively commencing now?—I cannot see that.

4365. Do you not?—No, the main drainage is done, or nearly done; the two outfalls are constructed, and the sewage of the metropolis flows from those outfalls.

4365*. You know that the most important portion of the northern outfall system, so far as interference with the river is concerned, namely, the low level sewer, is not completed yet, but is waiting for the Embankment?—That has to do with our Board.

4366. Does not that justify my observation that there remains a great deal of work to be done by the Metropolitan Board of Works which would throw them into correspondence with your Board, and raise questions between the two Boards?—No, certainly not, not anything in connexion with the drainage whatever.

4367. You have told my learned friend, Mr. Phinn, the general operation of your Board; I do not think you have told him your quorum?—The Act of Parliament provides for that.

4368. What is it?—Five is the quorum.

4369. I understood you to say that your attendance, out of 18, on the average was 15?—I think so; I cannot tell without looking at the minute books.

4370. Does not that occur to you, from your experience of business, to be a very large attendance, 15 out of 18?—Not too large for the work.

4371. In your judgment, is that attendance of 15 out of 18 such an average attendance as may be relied upon in ordinary business Boards of 18?—I have had so little to do with any other Board than my own that I cannot tell.

4372. You cannot give any explanation of the attendance fees, except that 100 *l.* is distributed in certain proportions?—That is provided for by Parliament.

4373. Who regulates the distribution?—The Board.

4374. The Board itself?—Yes.

4375. The Board, through the Secretary, I suppose?—The orders come from the Board; 100 *l.* per month is divided according to the attendances.

4376. How many meetings are there in a month?—There are four Board meetings.

4377. One hundred pounds being divided between 15 persons?—I should say that is about it.

4378. The committees, you say, are not entitled to participate in the attendance fees?—No.

4379. Are there such things as dinners?—No.

4380. Not even when you go up or down the river?—If the Board go on a view, they have their dinner on board the steamer the same as they have if they were at home at their own houses, and I suppose gentlemen are entitled to that; views on the river are so very few, that they are scarcely worth talking of.

4381. You are aware that the water companies now propose to pay 5,000 *l.* a year?—I have heard that.

4382. Does it appear to you that there is any objection to reducing the allowance from 1,500 *l.* to 1,200 *l.*?—No, I do not see any; I do not see why gentlemen should give their time and attention to duties and not be paid for it.

4383. It would not be an undue exaction on the part of the Board?—Certainly not.

4384. Supposing the remuneration was increased to 1,500 *l.*, that would only be a very small addition to each member for his attendance at the Conservancy Board?—A very small proportion.

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4385. Beyond the circumstances that you have stated to my learned friend, that you think the Board of Works is not entitled to representation, because its duties do not affect the navigation, is there any other practical objection that occurs to you with regard to their admission?—I thought I had said pretty clearly that as ratepayers they had nothing whatever to do with the duties which are entrusted to the Board of Conservancy, such as the management of the river, the navigation, framing bye-laws with reference to the harbour master, and so on.

4386. I mean, so far as regards any possible impediment; there would be no obstruction to the conduct of business by their admission?—I do not see why there should be any obstruction; I never heard it advanced that it would be an obstruction to business.

4387. Beyond the general principle which you have stated, you do not see what the ratepayers have to do with your Board?—That is what I have stated.

4388. But you do think it not unfair that these watermen and the occupiers of docks, and the proprietors of steamers and owners of shipping should be represented, because they are interested in the navigation?—That is what I say; those have really business on the river, and they have their property on the river, and so on; therefore I say that persons in that position are not to be compared to the Metropolitan Board of Works, who are simply the representatives of ratepayers, and not at all interested in the navigation of the river, or anything connected with the duties that the Conservancy Board were appointed by Parliament to fulfil.

4389. I think you told my learned friend that you do not see any objection to the addition of six, and you think that a body of 24 could accomplish the additional business of the Conservators as well as 18?—As well; I do not know particularly better.

Cross-examined by Mr. *Macnamara*.

4390. I want to ask you a few questions as to the representation: I understood you to say that, in your opinion, they who have property on the river, and who contribute largely to the navigation tolls, may fairly claim a share in the representation?—Taxation and representation generally go together; with respect to the taxation, if they pay, it is fair they should have a voice in the representation.

4391. I understood you to say it is fair that they who have property on the river, and contribute largely to the navigation tolls, should have a voice in the representation?—Yes, that is so.

4392. You are of opinion, I believe, from what I gather from you, that the present Board fairly represent the shipping and commercial interests within the limits of their jurisdiction?—I think so.

4393. That is from Staines to the Nore?—Nearly that, to Yantlet Creek.

4394. And they fairly represent the wharfingers and barge-owners within that district?—Yes.

4395. You think it right and proper that those interests should be represented?—What interests?

4396. Those which I have just now been mentioning to you, the wharfingers and barge-owners?—Parliament has decided that; and those gentlemen who are on the Board attend to their duties, and the Board work together very harmoniously.

Mr. *Clerk*.] He is talking of the Lower Navigation; you are not *ad idem*.

Mr. *Macnamara*.] I am talking about the Lower Navigation also (*to the Witness*).

4397. You have been talking about Gravesend; can you tell the Committee whether it was by the desire of the Conservancy Board when this Act of 1864 was obtained that six were added to their body?—No, it was not by their desire; they made no application; it was the application of the parties themselves.

4398. Were the parties themselves heard before Parliament?—Yes.

4399. Then these six, representing special interests in connection with the shipping on the Thames, were added?—Yes.

4400. I see

4400. I see amongst these, there is one to be elected by the owners of steamers plying on the River Thames not seaward of Gravesend; one by occupiers of docks, two by owners of lighters and steam tugs; have you yourself surveyed the Upper Navigation districts?—I, personally?

4401. Yes?—I have been through them; I have not made any careful survey; I have examined all the locks and made as good an examination as one can make in passing through, from five to 10 minutes; I made notes of the state of every lock that I passed through.

4402. Do you know whether a survey has been prepared for the Conservancy Board?—No; there has been a survey made of Bell Weir Lock, which is in a very dangerous state, and which I think was shown to the Committee the other day.

4403. Are you acquainted sufficiently with Oxford to know this fact, that Oxford spends about 10,000 *l.* a year in connection with the boating interest?—I know Oxford; I have friends living at Oxford, and I have been staying with them; that is all I know about it.

4404. Sir *G. Bowyer.*] How is that?—

Mr. *Macnamara.*] I was instructed that the expenditure by Oxford is about 10,000 *l.* a year in connection with the boating interests.

Sir *G. Bowyer.*] That is not the expenditure of Oxford.

Mr. *Macnamara.*] It is in connection with Oxford.

The *Witness.*] I know the locality of Oxford; I have seen the meadows under water; and I believe if the river was deepened at Oxford that the boating gentlemen would be very much benefited by it.

4405. Mr. *Macnamara.*] Do you know that the soil of the river at Oxford belongs to Oxford, and was granted by Royal Charter?—No, I do not.

4406. If you had the government of the Upper Navigation districts, I presume you would find it necessary to hold meetings from time to time in those districts?—I should think it very likely that the Board would make an arrangement of that sort, because it would require, particularly at the beginning, a great deal of personal examination; after that was once settled, I should think the business could be done just as well down here as up there.

4407. A great deal of personal examination and knowledge of local circumstances would be necessary?—Just so.

4408. And I suppose you would find it useful to have some safe channel of communication between yourselves and the people of those districts, that is, the inhabitants on the banks of the river?—If a person on the banks of the river wants anything he can write to me for it, and it would be attended to by the Board.

4409. As between yourselves and the towns on the banks of the river, you would at all events ask for information from the local authorities?—The Board would go and view the place, and they would no doubt call for such information as they might desire; it is impossible for me to tell, until the thing comes into play, what would be required, but I have no doubt, as I said before at the commencement, that it would require a great deal of personal examination.

4410. Are you aware of the tolls which were taken at the locks on the Upper Navigation?—No, I am not; I do not remember it.

4411. I am told that more tolls are taken at Iffley Lock than on any other part of the navigation?—I heard that to-day for the first time.

Cross-examined by Mr. *Lopez.*

4412. Are you a Royal Navy Captain?—Yes.

4413. For how many miles of that Upper District do you seek to acquire jurisdiction?—From Staines upwards.

4414. For how many miles will you acquire jurisdiction by this Bill?—Over 78 miles.

4415. One hundred and seven miles, is it not?—Is that to Oxford, do you mean.

4416. Yes; is it not over 100 miles?—No.

4417. I am told that it is 120 miles; are you aware that on the portion over

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which you have acquired jurisdiction, there are 29 mills?—I have heard that.

4418. You are of course aware that they have an important interest in the river?—I suppose that the interest of the millowners in keeping up the head of water is somewhat analogous to the interest of the navigators in keeping up the depth of water.

4419. I suppose I need hardly ask you, after what you have told my friend, that you have no objection whatever to their being represented on the Board?—I have nothing to say about that at all.

4420. Are you of opinion that they ought to be represented?—I decline giving any opinion about the constitution of the Board.

4421. I thought you told my learned friend that you think the lighter owners and the steamboat owners are rightly represented, because they have an interest in the river?—That is what is past.

4422. Having told me that, will you please tell me why the millowners are not entitled to representation on the Board?—I have never given the subject any consideration whatever; they have nothing to do with the navigation; I think those who keep the navigation up do what the millowners want.

4423. You have told my learned friend that you think the lighter owners and the steamboat owners ought to be represented, because they have a great interest in the river?—No, I did not say that.

4424. You said that they are rightly represented?—I said that they were on the Board, and that they had an interest in the river.

4425. And that the ground that they were represented was because they had business on the river?—That is the ground.

4426. And also property on the river?—That is what I said.

4427. That being so, have not the millers likewise a ground for being represented on the Board?—I do not know anything about it; I have never thought of it; I did not know that I was going to be examined or I would have come better prepared.

4428. Have you any mills on the Lower Navigation?—No; no mills in connection with locks.

4429. I think your Conservancy Acts do not apply in any way to mills?—No.

Examined by the *Committee*.

4430. Colonel *Napier Sturt*.] Would the present Board of Conservators strongly object to having their number increased?—They have objected to it in their Petition; I do not know their views; I understand that some of the Conservators are to be examined.

4431. I thought they might have changed their views from something you said?—No; I consider that 18 members are enough to do the work.

4432. Mr. *Neate*.] I understand your debt is in course of reduction, is it not?—Yes.

4433. You will very soon be likely to have a surplus?—I hope after the river is well dredged and deepened, that we shall have a surplus in the course of a few years.

4434. You are paying something off your debt every year?—Yes.

4435. May I ask how much you are paying off year by year?—We have paid off 10,000 *l*.

4436. In how long a time?—That has been during the last $2\frac{1}{2}$ years or 3 years.

4437. Then you are paying off at the rate of 3,000 *l*. or 4,000 *l*. a year?—Yes.

4438. Are you at liberty to tell the Committee whether the Board of Conservators have considered, in the event of the management of the river being handed over to them, how much money they would be willing to raise upon the security of their present income?—No, I have not heard that discussed.

4439. So far as you know, they have not come to any opinion on the subject?—No, I believe they are of opinion that 30,000 *l*. will be wanted at once to put things in a safe condition, and then there would be about 70,000 *l*. more required.

4440. By a system of through tolls, you mean tolls going up to Oxford; your own navigation goes down to Teddington?—Yes, I should think so.

4441. You

4441. You do not assume tolls down to London?—No, we begin to take tolls at Kew, where the towing path commences.

4442. Then by through tolls, you mean tolls down to Kew?—Yes.

4443. Part of those tolls would belong to one fund, and part to another, would it not?—Yes; the tolls that we take at present would remain as at present on the same fund, and the tolls that were taken from the Upper Navigation above Staines, I apprehend would be paid to the Upper Navigation fund.

4444. You do not take any tolls b low Kew?—No.

4445. The Lower Navigation funds are not increased in any way by the barges that navigate the river below Kew?—No, not at all.

4446. Do they not pay for wharfage?—No.

4447. They do not pay for anything below Kew?—No.

4448. You do not see any difficulty in keeping a division of the fund?—No, not at all.

4449. The Bill contemplates that all the tolls above Staines should go to the new account?—Yes; that is perfectly understood.

4450. You do not think that the Thames Conservators, in respect of their interest in the Lower Navigation, have any interest in keeping down the tolls of the Upper Navigation for the purpose of increasing the traffic from London?—That would be a matter for the Board to consider; if they thought by reducing the tolls a little they would get more business on the river, most likely they would do it.

4451. Would they not be placed, so far as they represent the Lower Navigation, under the temptation of diminishing the income of the Upper Navigation for the purpose of increasing the income of the Lower Navigation?—No, I do not think they would.

4452. You are not aware that the Thames Conservators have discussed what regulations they will make as to holding meetings?—No, there has been nothing whatever said by the Board upon that subject.

4453. You say they are in the habit of going up that part of the river which is within their management?—Yes.

4454. Are there any members among them who take a special interest in the fresh water navigation?—Yes, they are all interested in it; they examine all the locks and towing paths on their visits of inspection, and the engineer has always been in attendance upon them.

4455. Mr. *Peel.*] What is the amount of the contribution of the water companies to the Conservators?—At present it is 1,400 *l.* a year.

4456. Mr. *Acland.*] Do you think as it is an object to raise some income from all the parties interested in the improvement of the River Thames that it would be objectionable to require licenses for pleasure boats on the same principle that the Legislature has placed a tax on a license for salmon rods for the improvement of the salmon rivers?—I think it would be a great pity to put any restriction on the pleasure traffic on the upper portion of the river; you mean by imposing a tax for passing through locks.

4457. Inasmuch as a considerable part of the river is open to the enjoyment of wealthy persons well able to pay for their pleasure, but who do, in fact, not go through locks, do you see any great objection to requiring a license for the use of the river for pleasure purposes on those parts of the river where it does not naturally follow that people will go through locks?—At present, pleasure boats are exempt from toll by Act of Parliament.

4458. Mr. *Peel.*] They always pay sixpence, do they not?—If they do, they pay it of their own accord; it is not a legal demand.

4459. Mr. *Acland.*] Do you not think that wealthy persons, paying for their pleasure, are as much interested in the improvement of the river as any other class of persons?—I must confess that if I had a little yacht upon the river myself, and I had a fair prospect of the river being deepened and improved, I should, for one, be very glad to contribute a little towards the maintenance and improvement of the river; but whether it would be well to levy a tax upon persons for that purpose it is not for me to pass an opinion upon; I should not object to it myself personally.

4460. Do you think that the number of persons using boats for the purpose of pleasure are so large that a considerable income might be raised in that way?—If a tax was levied on persons who use the river for pleasure, it might be that a large revenue would be got, but how it is to be collected I cannot tell.

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4461. My suggestion is a license on the boat in the same way as the Legislature has decided that there shall be a license for a salmon rod?—That would produce a large revenue, no doubt.

4462. Sir *G. Bowyer.*] Do you think it would produce much?—I think it would.

4463. Mr. *Acland.*] Looking at the use of the river at Oxford, Eton, and London, might it not produce a very considerable income?—I think it would.

4464. Colonel *Napier Sturt.*] It would be very unpopular, would it not?—Very unpopular.

4465. Sir *M. H. Beach.*] Why should you license pleasure boats and not barges?—Barges pay toll.

Re-examined by Mr. *Clerk.*

4466. The small boats on the upper part of the navigation do pay tolls, though not on the river?—I believe they do.

4467. Colonel *Napier Sturt.*] The owners of pleasure boats and fishing punts are generally men who can very well afford to pay?—Yes.

4468. A small tax upon them would not ruin them?—No; but it is the principle that is objected to; it would be very unpopular, even if it were only a farthing; it would be so unpopular that there would be a great outcry against it.

4469. Mr. *Clerk.*] There is one thing with regard to the reduction of the debt I wish to ask you about; you have paid off 10,000 *l.* of your debt within the last two and a-half years?—Yes.

4470. Shall you be able to continue to do that?—No; not long

4471. Had you a surplus accumulated for some time which gave you the means of doing that?—We had a large sum paid to us for land taken for the Thames Embankment; that is what enabled the Board to do that.

4472. You do not see any probability of continuing the reduction of the debt at that rate?—No, that is what caused it.

4473. Mr. *Neate.*] I was in hopes that you had 3,000 *l.* or 4,000 *l.* a year regular surplus?—When the dredging and the improvement of the navigation are carried out down the river, I do not think there will be any surplus.

4474. Mr. *Clerk.*] With regard to the discussions at the meetings, if there was any engineering question which arose, the engineers would meet, and in addition to the communication that takes place by the delegates from the Board of Works, one engineer would explain the details of the scheme to the other?—What are you speaking with reference to.

4475. With reference to the representation of the Metropolitan Board of Works at your Board?—The thing is clear that when a plan for any works which can be carried out by the Metropolitan Board of Works is brought before the Board, the engineer has to report upon it, and he is generally directed to communicate with the engineer of the Metropolitan Board of Works, and then he reports the result of his communication.

4476. That will continue to be the case whether there is a representation at the Board or not?—No doubt.

4477. If there would be no obstruction, would the consequence of having two members of your Board be to produce more talk?—No doubt about it; the more there are, the more talking there would be.

Monday, 25th June 1866.

MEMBERS PRESENT:

Mr. Acland.	Mr. Milner Gibson.
Sir Michael Hicks Beach.	Mr. A. W. Peel.
Sir George Bowyer.	Colonel Napier Sturt.
Lord Eustace Cecil.	Captain Vivian.

THE RIGHT HONOURABLE THOMAS MILNER GIBSON, IN THE CHAIR.

Admiral Sir *Frederick Nicholson*, called in; and Examined by Mr. *Clerk*.

Admiral Sir *F. Nicholson.*

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4478. You are a member of the Board of Conservancy?—Yes.

4479. You are one of the two members nominated by the Board of Admiralty?—Yes.

4480. You have been a member of the Board, I think, since 1861?—Yes.

4481. We heard from Captain Burstal on Friday how the Board was constituted; I will ask you, with regard to the attendance of the members of the Board, how the members attend to the business of the Board; is the attendance regular?—I should say it is very regular indeed.

4482. We learned from Captain Burstal on Friday that, out of the number of 18, the average attendance was about 15?—I think it is about that; I may add that before the Board was increased the proportion of those attending to the whole number was very much the same.

4483. Your inquiries are conducted, I believe, in an open court; anyone can come in and communicate with you?—It is not precisely an open court, in the sense that the public are admitted.

4484. No reporters are admitted; there are no reports of conversations?—No.

4485. Anybody can attend your Board, with respect to requirements?—The practice is this: that if any persons wish to see us, they write a letter applying for a meeting, which is always granted, as far as my knowledge extends.

4486. There are a great variety of matters which are attended to, as affecting the navigation, at your Board?—Yes.

4487. Those, I suppose, are the principal matters which come before you?—All the matters concerning the navigation, whether as regards fences, piles, embankments, and so on, are, of course, before our Board.

4488. The places of mooring, regulating the tiers of colliers, and so forth?—Yes.

4489. The number of questions which would affect the interests, in a special degree, of the Metropolitan Board of Works, would, I take it, be very few, as compared with your general business?—Very few indeed.

4490. I believe you have some evidence of that with regard to the number of communications which have taken place between the Metropolitan Board of Works and the Conservators in the last eight years?—Yes,

4491. I think that is an extract (*handing a Paper to the Witness*), showing the number of communications which have passed, and the different subjects of communication between the Metropolitan Board of Works and the Board of Conservators, from the year 1858 down to the year 1866?—This is an extract from documents in our office, and I have no doubt that it is correct.

[*The Witness delivered in the same, which is as follows*:]

Admiral Sir *F. Nicholson.*

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(1.) 21 June 1858 Extension of sewer outlets.

2 Feb. 1859 Gaugings at Teddington Lock.

(2.) 10 Oct. 1859- Alteration of Earl Sewer Outlet.

31 Oct. 1859- (1.) Deputation attended with reference to a proposed Embankment from Queenhithe to Westminster.

(3.) 17 Dec. 1860 - Works for Northern Outfall Sewer.

1863 - - (2.) Thames Embankment. Correspondence on the plans of the works.

1864 & 1865 - (3.) Thames Embankment. Correspondence, as presented to Parliament, on the subject of material for filling in.

(4.) 17 Oct. 1864 - The regulations for pumping sewage into the river in Halfway Reach.

1865 - - (4.) Correspondence on the subject of the Thames Embankment, South Side (*see* Plans, &c.).

1866 - - (5.) Chelsea Embankment (*see* Plans, &c.).

(5.) 22 Jan. 1866 - Pumping sewage into tidal portion of River Lea.

(11.) { 5 Communications on Sewers
5 „ Embankments
1 „ Gauging Teddington } in 8 years.

4492. That shows that the total number of communications are 11 in the course of eight years?—Yes; 11, including the long correspondence which has been alluded to on the former occasion here, with reference to the materials.

4493. A number of those refer to that matter of the filling in the Embankment, with respect to which there was a long correspondence?—Yes.

4494. I think you will see there are five with reference to the question of sewers in the eight years?—Yes.

4495. And five with reference to the Embankments?—Yes.

4496. One with reference to the gauging the quantity of water flowing over Teddington Lock?—Yes.

4497. Those are the 11 communications which have passed in the course of the eight years?—Yes.

4498. With regard to those communications as to the sewers, some, I see, had reference to the question of the outlet sewers for the Embankment?—Yes.

4499. Those are matters, as we have heard, which are, at the present time, either completed or on the eve of completion?—So I believe.

4500. One other matter connected with the sewage was the question of pumping, and whether they were pumping at the right time of the tide down at Barking, when they first commenced pumping?—No; I think it was on the southern side; on one occasion we visited the place; we thought they were pumping at the wrong time of the tide, instead of letting the sewage go into the river at high water, so that the ebb might carry it down; we were apprehensive that they were letting it in at a time of the tide when it might have been carried up the river; I think I am right in saying that the communication alluded to here refers to that; I will not be quite positive, but I think it refers to that.

4501. Whether the Metropolitan Board of Works, or a railway company, or a bridge company, have to make a communication with your Board on the subject of your works, is there, first, a reference to the engineer to consider the plans?—The usual course is this: a letter of course comes to the Board; if it is a matter requiring a good deal of detail to be looked to, and certain plans to be examined, it is usually referred to a committee; which we call the General Purposes Committee, and the engineer at the same time makes his report; there is no work, certainly, of the slightest magnitude—I really might almost say, there is hardly a pile driven in the river which some member of the Board does not see.

4502. You would always, I suppose, be guided to some extent by the opinion of your engineer on a matter of that kind?—Of course, in purely engineering matters.

4503. Something has been said about facilitating discussions, if a member from the Metropolitan Board were present on your Board; do you think that having

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having such a gentleman there, or two of them would obviate that moderate inquiry which you now have through a reference to your General Purposes Committee, and even to the engineer?—I do not think that any number of members being added, either from the Metropolitan Board of Works or any other body, would alter the general course of our proceedings in that respect.

4504. Sir *G. Bowyer.*] I think that is not quite an answer to the question; the question was, not whether it would alter the course of your proceedings, but whether it would at all facilitate matters arising between the two Boards.

4505. Mr. *Clerk.*] Supposing that there was any question about a new bridge, or the driving in of piles, and so on, do you think that having gentlemen from the Metropolitan Board of Works on your Board would facilitate or expedite the proceedings by the General Purposes Committee, and the inquiry by the engineer?—No; I think it would rather probably tend to delay them.

4506. In what way?—I think the more members are on the Board, the larger the number, the more likely are their proceedings to be delayed.

4507. The question, probably, where you could possibly come in collision with the Board of Works would be a question of engineering in the Thames, by the construction of an embankment, or the driving of piles?—The only question where we can come in collision is similar to the one which has been referred to with reference to the materials; that having been already before the Committee there is no occasion further to allude to it.

4508. Without going further into that question, as to which were in the right or wrong as to that, supposing any similar question to arise, does it appear to you that having two or three advocates from one Board would facilitate the arriving at a conclusion by your Board?—I think not; I think the course of proceeding at present is a better one; I think that the occasions now are exceedingly rare, and they seem likely to be still rarer in consequence of the works being in a very advanced state, and nearly completed; and I think the modes of communication, either through the Secretary, or through the engineer, which have been adopted, are likely to be quite sufficient for the rare occasions on which we are likely to come into correspondence with the Metropolitan Board of Works.

4509. That matter resulted in an arbitration?—It was ultimately referred to the Board of Trade, who appointed two engineers.

4510. Now, supposing Parliament upon this matter should think it expedient to increase the number of your Board, what class of men should you rather advocate as being added to the Board in preference to any others?—If you mean the question with reference to the present Bill, of course, if any are to be added, they would naturally be persons connected with the new district which is to be placed under our control.

4511. Who might possess skill, knowledge, and special qualifications; do you conceive such qualities are afforded by the Metropolitan Board of Works?—They have nothing whatever to do with the new district.

4512. Any more, I take it, than they have with you?—They have nothing whatever to do with the river, that I am aware of, except bringing sewage into the river.

4513. Or rather taking it out of the river?—They bring it into the river at Barking; they keep it out of the river in a special district, but they bring it into another district.

4514. Those are the whole of their functions with reference to the river, are they not?—So far as I know.

4515. To keep sewage out of the river within a particular locality?—Yes.

4516. Now you have had the Report of two Committees of the House of Commons as to the fact of your Board working well, both in 1863 and 1865?—Yes; the first Committee was a Committee, I should say, who inquired very fully into the whole working of our Board; but the second Committee, to which you allude, was a Committee on the Thames, on the Report of which the present Bill is founded; I presume they thought well of the work, and the Board, as it is now, sought to increase the sphere of our operations.

Cross-examined by Mr. *Phinn.*

4517. Do the Conservancy Board object first of all to an addition to their

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numbers, in respect of the new district?—Our feeling is this, as you perhaps know: on a former occasion we thought that a Board consisting of 12 members was sufficiently numerous, and six members, as you know, were added; we think now that a Board of 18 is amply sufficient in number; but of course if you are going to place a large new district under us, if it is absolutely necessary to increase our numbers for the working of that district, we, I think, should be willing to receive an addition of a small number of persons from that district; still, I must say, I have always felt that the more numerous the Board is the worse is the work done; there must of necessity be more discussion, and the work must either be transferred to the paid officers or to small committees; I think, if it can by possibility be done, that the work should be done by the Board, because the more the Members of the Board know the whole of the details the better it will be done.

4518. Do you know anything of the constitution of other Boards, who have the guardianship of rivers?—I can tell you something with reference to the Mersey.

4519. Is the Mersey well done, to begin with?—Yes.

4520. How many Conservators are there over the Mersey?—I do not know the number, but Admiral Evans told me that the more he did it himself the better it was always done; his is a very large Board.

4521. Twenty-eight?—No; they are never all called together except when he wants money.

4522. Do you know that the Clyde has 25?—I know nothing whatever about the Clyde.

4523. Nor Sunderland?—No.

4524. You thought 12 was the best number?—I did not say the best, I said a sufficient number.

4525. I think you did in 1863?—I was not examined in 1863.

4526. Was not that your opinion in 1863?—My opinion was with reference to its being a sufficient number.

4527. Parliament added six?—Yes.

4528. Without giving you an increased district?—Yes.

4529. Supposing Parliament were to think it right to add, not exceeding six, do you think that would cripple the working of your Board?—I would rather have three.

4530. Supposing Parliament were to add six, my question still is, do you think that would at all cripple the working of the Board?—If you mean by crippling that it would be absolutely an impracticable number to work with 24, I should say not.

4531. I will leave you and Mr. Wilkinson to discuss the question with reference to the Metropolitan Board of Works; I will not trouble you with that; but should you see any objection to the 600 or 700 gentlemen who are interested by property, and vicinity to the river, nominating three or four members?—You mean the Upper Navigation Commissioners?

4532. Yes?—I have really not looked carefully into that part of the Bill, because, of course, the Promoters were to find a good constituency for the members they wish to put on, so that I can hardly give an opinion upon that.

4533. In point of fact, is it not the case that the nominated members take just as much care of the special interests of the river as the elected members?—There is no question of it.

4534. They look upon themselves, for instance, those nominated by the Admiralty and the Board of Trade, as discharging a public duty, without any reference to particular interests or connections?—Yes, that is the view I have always taken; I think that is generally the view taken of the Board by both parties.

4535. Do you find any antagonism between the nominated and the elected members?—No.

Cross-examined by Mr. *Wilkinson.*

4536. Then I may take it from you that, admitting the necessity of some slight alteration, you think that the parties to be added should be those conversant particularly with the wants of the district which is to be placed under your jurisdiction?

jurisdiction?—I did not admit the necessity; I said that if three members were placed upon the Board, of course we must submit.

4537. I understood you to say that they should be persons particularly connected with the district to be added, to which your jurisdiction is to be extended?—I think it is only a reasonable proposition that, giving us a large and new district, if we are to have additions, they should come from that district in some way; I do not know how.

4538. I understood you to say that you could not exactly make out in what way the Metropolitan Board of Works would be interested in that district?—I said they had nothing whatever to do with that district.

4539. Their chief object, so far as your Board is concerned, being to maintain the purity of the river within their district?—Within the particular district.

4540. Does it not occur to you that the fouling of the water above their district would render entirely nugatory any works or any precautions which they might take within their district?—It would not render them nugatory; but of course if sewage is put into the river above a certain place it will, if it is not prevented, flow down, or part of it will, if it is not at all deposited.

4541. When I say rendered nugatory, it is simply a question of degree, but *pro tanto* it would neutralise their efforts within their jurisdiction?—That depends upon where it is; I should think if it is put in above Staines it would hardly reach the lower part of the river.

4542. You consider Mr. Rawlinson to be a gentleman entitled to some credit, do you not?—Certainly.

4543. Did you hear his evidence?—I heard some of it.

4544. Did you hear that part of his evidence in which he stated that the throwing in of sewage at Oxford was a criminal matter, as far as London was concerned?—I very much question whether the Oxford sewage ever reaches London, considering that it comes through 34 locks.

4545. But at any rate, without pressing you further upon that point, it follows that there is a great difference among many persons well qualified to pronounce an opinion upon that very subject?—I do not know.

4546. You do not agree with Mr. Rawlinson?—I did not say I disagreed with him.

4547. Supposing you agree with him, which is still stronger for me, under those circumstances, is it not material that the Metropolitan Board of Works should have, so far as they can, such a control as would prevent that contingency arising?—I think the present Board of Conservators have shown themselves as anxious as a Board can be to prevent sewage coming in; we have a very heavy lawsuit with the town of Kingston, which is not finished yet, with reference to that very question.

4548. I am quite sure you understand me when I say that I am not here attacking the Conservators in any possible way; I think you will admit that it would be desirable to prevent such a contingency arising as that of neutralising the works effected by the Metropolitan Board of Works within their district for the purification of the Thames, by the introduction of foul water?—No doubt that would be desirable.

4549. The list which you have handed in, as I understand you, is an extract from your books, representing the different occasions on which the Metropolitan Board of Works have had correspondence with your Board, and have attended your board by deputations?—Not deputations; only correspondence.

4550. I see in this list, "deputation attended"?—I should like to explain that. This list was only put in my hands just before I began my evidence. I saw it at the office for a few moments only.

4551. So that if I were disposed to object to its accuracy, I might?—It is the Secretary's document.

4552. I do not want to raise any such point as that. I only want to know whether that professes to include all the occasions on which, whether by deputation or by correspondence, communications have taken place between the Board of Works and your Board?—I cannot speak positively as to deputations; but I have every reason to believe that it is quite correct with reference to correspondence.

4553. Does this contain any reference to the case of the "Zebra," which resulted in a lawsuit?—Can you tell me the date?

4554. 1861 or 1862. There was a conflict between you in respect to the "Zebra" grounding somewhere near Deptford?—Can you tell me the date?

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4555. 1861 or 1862?—I think it must have been before I joined the Board, for I do not remember it.

4556. Were you a member of the Board in 1861 or 1862?—I joined the Board in 1861.

4557. This professes to give an account from 1858?—I should like to explain that. I did not bring that document as part of my evidence. It is a document which was extracted by the secretary, and was only ready this morning. Of course, I can only speak to what happened while I was on the Board. I believe that is a correct list.

4558. My friend puts it into your hands as a list of all the communications which have taken place between the Metropolitan Board of Works and your Board, and you tell me that, so far as regards anything anterior to 1861, you can give no evidence upon the subject of the frequency of communication between the Metropolitan Board of Works and your Board?—Of course not, because I was not on the Board.

4559. Do you remember that case of the "Zebra," to which I have called your attention, and with regard to which many communications took place between you and the Board, and I believe it is not settled yet; it is known under the name of *Brownlow* versus *The Metropolitan Board of Works*?—I do not remember it in the least; our deputy chairman is here, and he will probably remember it; he was on the Board during the whole period.

4560. Then I may take it that you really do not propound this to the Committee as evidence of the entire extent of the communications which have taken place between the two Boards?—I believe it is a correct extract from our letter-books.

4561. You are aware of this, that, in addition to other matters which are omitted clearly from that list, the Metropolitan Board of Works are about now to continue the Chelsea Embankment?—Yes.

4562. Would that involve questions, very possibly, of the same character which have been raised with reference to the existing embankment?—The position of that is, I believe, this: a certain line has been agreed to between the two Boards, and therefore there would be no question with regard to the line.

4563. The very last letter which was read to the Committee the other day was this: "I believe that the matters as yet unsettled, and respecting which I have had no authority to confer with you, are the provisions as to the filling in, and as to the valuation of the foreshore which would be inclosed;" that is a letter from Mr. Leach, dated so late as 2nd June 1866?—The matter which is unsettled is with reference to the material taken from the river; we wish to have the clauses in that Bill worded in such a manner as that there shall be no question about where the materials are to come from with which this new embankment is to be made; what I state now is correct, that, with regard to the mere line of the embankment, and the mere direction of it, it is settled.

4564. It is sufficient for me to get from you, that there is now actually a question pending with reference to that embankment between the Board of Conservators and the Metropolitan Board of Works; it is immaterial whether it is a question as to the line, or whatever it may be; I do not want to go into the details; all I want is to know whether they are not at issue upon that question?—I do not exactly know whether we are at issue or not, because it is very possible that the Metropolitan Board of Works may agree to clauses which we wish to put in, and, if so, then there would be no issue.

4565. With regard to the valuation of the foreshore?—That is done by an assessor; we have nothing to do with that.

4566. Still that is a matter which you are interested in *qua* Commissioners, is it not?—When the first Thames Embankment Bill was framed, the assessing of that particular part of the foreshore was done in a different manner from the usual assessment. An assessment is usually made by an assessor, who is named by us, and approved of by the Board of Works, not by the Metropolitan Board of Works, but by Mr. Cowper's department. When this Bill was brought in, the Conservators were left out entirely with reference to the appointment of an assessor. I think, if I remember right, an assessor is appointed by the Metropolitan Board of Works or by Mr. Gore's department; so that, with regard to the assessment, and what is paid to us for our foreshore, we have nothing whatever to do with it.

4567. But

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4567. But you have a direct interest in the question of the foreshore, and that is the question on which the Metropolitan Board of Works have corresponded with you, and which still remains unsettled, according to that letter of Mr. Leach's?—I never heard of there being any question with regard to the foreshore; there was a question with regard to the line.

4568. Were you in the room when Mr. Tite was examined?—Yes.

4569. You heard him say distinctly, representing the Metropolitan Board of Works, that we are at issue with the Conservators upon this very Bill for the embankment of the Thames at Chelsea; you have no reason to doubt the correctness of that assertion?—It depends entirely on how you take the words "at issue."

4570. There is a question pending between the two Boards, is there not?—I should like to explain it; so far as I understand the question, it has been this: plans were placed before us; we did not approve of the first line; and it ended in a line being adopted which is now agreed to. I believe, if I remember rightly, that we petitioned, in order to give us a *locus standi* to insert certain clauses, if we think those clauses are necessary. If that is being "at issue," that is the question.

4571. You have at this moment petitioned against the Bill, and that Bill is still pending?—I believe so.

4572. At present the Board of Conservators is composed, as we know, of various interests, a great proportion of which represent the commercial interests on the river, do they not?—Are you speaking of the six members who were added to represent certain bodies?

4573. Yes?—They represent, as you know, different bodies; two represent the shipowners.

4574. We have that already; we heard that one was nominated by 12 proprietors of the river steamers?—That is so.

4575. I will put the same question to you as I put to Captain Burstal; do you think that the interest of those steamboat proprietors can be compared for one moment with the interest which the Metropolitan Board of Works must have in the river?—I think there is a distinction between the steamboat proprietors and the Metropolitan Board of Works in this respect, that the steamboat proprietors have vessels constantly calling at our piers, on which vessels we levy tolls; but I do not think it is my place to defend putting on the representatives of the steamers on our Board, because I was one of the objectors to have them put there at all.

4576. I think you have sufficiently answered my question with respect to those two bodies; do you not think that the Metropolitan Board of Works have a greater right to be represented than the steamboat proprietors?—No; for this reason, that the Metropolitan Board of Works have nothing to do with the river beyond, as we all know, the sewers, which are within their district; whereas the gentlemen who own these steamboats have a most direct interest, because at every call of each steamer we levy a toll on them. They are constantly passing, and, with regard to the accommodation at the piers, they have made complaints to us that large steamers come where they think there ought to be two or three small steamers; all those direct and minute interests come directly under our cognizance, and they form our chief duties, such as regulating these steamers and piers.

4577. Do you think with regard to those interests in the river, that the duties of the Board of Conservancy are as important, with reference to the steamboat proprietors, as the larger and more important duty of preventing the pollution of the river?—To prevent the pollution of the river is a very important matter, but that has been taken up by the Legislature, so far as the metropolitan district is concerned, by giving the Board authority to run it into the river lower down, so as to purify this part; the thing is done and cannot come before us daily; whereas the interests of these particular steamboat proprietors, with reference to their passengers and so on, are things which are almost hourly under our notice, as it were.

4578. You are aware that maintaining the embankment, and so on, would raise questions of that kind from time to time?—I think not.

4579. Now, tell me this,—the matters which you describe as coming under your cognizance, particularly as Conservators, are those affecting the navigation

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which include questions with reference to piles and embankments?—Yes; piles and embankments come under our notice very often.

4580. Does not that, again, raise a particular point; have not the Board of Works a great deal to do with that embankment?—Yes, but their work is finished.

4581. Not on the south side?—The line being once agreed upon, I am quite sure the Metropolitan Board of Works will construct the embankment so solidly that we shall not have any application, as we have from these other wretched embankments, to rebuild, and so on; I look upon their work as a work for all time; I do not think there is the slightest chance of coming into collision with them, with regard to their own embankment.

4582. Except the confidence which you place in the Metropolitan Board of Works, there would be the danger of having the same kind of applications from them that you have from other parties?—The parties who apply to us are either where new embankments are being made, or old embankments have to be patched up.

4583. Exactly, quite different things to their embankment?—Quite different in their character.

4584. Different as regards the excellence of construction?—The embankments that I allude to are embankments purely for commercial purposes; theirs is an embankment where there is to be a large traffic; a difficulty arises, especially with regard to piles; we are obliged to arrange the piles so that the neighbours may not obstruct each other; those are questions that do not affect the present embankment.

4585. Are you not aware that the Metropolitan Board of Works propose to give accommodation to the steamboats by means of piers and stairs?—The piers and stairs were brought under our notice some time ago, when the plans were settled; they were very greatly improved by the suggestions of our Board, and I have no doubt they will be very useful when they are entirely under our control.

4586. That, again, is a *vexatio questio*; the Board of Works do not admit that?—If you read the Act you will see how that is.

4587. No, I do not want to read the Act; I will read the evidence here; do you not know that it was said by Mr. Bazalgette that that was a question on which there was a difference of opinion?—If he said that, he was mistaken.

4588. No doubt you do not agree with them?—No, I do not.

4589. You say your average attendance is 15 out of 18; that strikes me as a very large attendance?—It is about that.

4590. We understand also that there is a fund from which the members are paid?—Yes.

4591. They get 100 *l.* a time, do they not?—I will explain how that is: we divide 1,200 *l.* a year; 100 *l.* is taken each month; there are four attendances; if you multiply 15 by 4, and divide 100 *l.* bythat, you will find exactly what each member gets.

4592. There are four attendances a month?—The Board meets every week; the committee meets every Friday; the attendances are then added up at the end of the month, and the 100 *l.* is then divided by four times 15, giving the deputy chairman a double allowance.

Cross-examined by Mr. *Lopez.*

4593. There are 29 mills on the Upper District, are there not?—So I have heard.

4594. I need hardly ask you, are they not entirely dependent on the river for their motive power?—I believe so.

4595. Have you any mills on the Lower Navigation?—None.

4596. Your Conservancy Act does not apply to mills?—I think not.

Re-examined by Mr. *Clerk.*

4597. You said, in answer to my learned friend, Mr. Phinn, that, if absolutely necessary, you would raise no objection to the numbers, so far as the management of the locks of the Upper Navigation are concerned; you, independently of the

the other members of your Board, have had a personal experience over a good many portions of the navigation?—Yes.

4598. From Teddington up to Staines?—Yes.

4599. Do you agree with Captain Burstal, that the navigation above Staines is in all respects analogous to that below Staines?—I have passed through there, and I cannot see any difference, with the one exception, that there are some mills there.

4600. Now I come to my learned friend, Mr. Wilkinson's, point; he contends that there is some great obligation on the part of his clients to maintain the purity of the river; that maintenance of the purity of the river is to prevent all sewage from reaching the river at a higher point than Barking or Plumstead?—Yes.

4601. There their duty begins and ends with regard to the metropolis?—Yes.

4602. I understand my learned friend to contend that they ought to have a control over the works higher up, so as to prevent sewage hereafter being sent into the river; now, supposing that control is to be created by the presence of one, or two, or three members of the Metropolitan Board of Works at your Board, could those gentlemen do more than give information to you as to the fact of sewage being discharged from some of those upper towns?—We get much better information from our own officers, and river keepers, and inspectors, who each have a district; we always hear of any impurity coming into the river, one of our constant occupations is looking into these questions and ordering summonses to be taken out, and getting fines inflicted for such offences.

4603. So that you now have the most efficient means of maintaining the purity of the river under your existing powers?—If we had the power we should; we tried to get it in the case of Kingston, but failed.

4604. Mr. *Phinn.*] You mean that you tried judicially?—We had a clause inserted in our Bill, which passed the House of Commons, but was thrown out in the House of Lords upon a point of order.

4605. Mr. *Clerk.*] Now that the water companies, who are so directly interested in the question of the purity of the upper water, are to contribute to your funds, can you expect that, that at all events, will be the most ready way to bring under your notice the fact of any impurity being sent into the river?—I should think so.

4606. They would have a direct personal interest to bring these matters under your notice, even supposing your inspectors of the river omitted seeing them?—I think so.

4607. Now with regard to this question of the Chelsea Embankment, my learned friend, Mr. Wilkinson, wishes it to be understood that Mr. Tite was of opinion that some great difference existed; I see what Mr. Tite said on Friday was this: "I have brought in a Bill for embanking the whole of Chelsea, but we are at issue with the Conservators upon that; why I really do not know; the engineers have met and do not agree, and the Conservators of the river appear in opposition to that Bill." Now we will see what it was; there was a letter from Mr. Leach, stating that the line of the Embankment was not agreed upon at first, but upon a communication taking place between the engineers it was arranged?—Yes; I have a recollection of that.

4608. There was a letter which was handed in on Friday by Mr. Bazalgette, signed by your engineer, Mr. Leach; this was after you had petitioned against their Bill, because it is dated 2nd of June this year; "I believe that the matters yet unsettled, and respecting which I have had no authority to confer with you, are the provision as to the filling in (that is the Embankment), and as to the valuation of the foreshore, which would be inclosed." There was a great difficulty with regard to the wording of the clauses in the original Embankment Bill, as to where the stuff was to be taken from; there was some ambiguity, was there not?—No; the clauses are not stringent enough, they are too permissive.

4609. You are anxious to have clauses inserted to remove any doubt with regard to the Embankment?—Yes.

4610. Supposing there were gentlemen from the Metropolitan Board of Works now sitting upon your Board, would that, in any degree, obviate the necessity for your petitioning?—I think certainly not.

4611. You, as the Board of Conservancy, think that there should be no doubt

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as to where the stuff is to be taken from which is to fill in the Embankment?—With our experience of what took place upon the former occasion, I should say we ought to take most stringent powers to see that the same thing did not occur again.

4612. So that whether you had members sitting there or not, you must have a great deal of talk with no further practical result than what you have already?—Quite so.

4613. So with regard to the piers, we understand from my learned friend, Mr. Wilkinson, that the ownership of the piers, which will be put up in the river, is a *vexatio questio* between you and the Board of Works; you are not aware of that?—As I read the Act of Parliament, they are all to be under us.

4614. Mr. *Wilkinson.*] I said a question dependent——

4615. Mr. *Clerk.*] Supposing it is a *vexatio questio*, is that a matter which will have to be determined either at law or arbitration?—Yes.

4616. How would that be avoided, in any degree, by having some members from the Metropolitan Board of Works sitting at your Board and discussing this *vexatio questio*?—I am quite sure that the Conservators will never consent to have a single pier on the river under any other control than their own.

Mr. *Wilkinson.*] Mr. Bazalgette said, "There is a divided control; that is just the point."

Mr. *Clerk.*] That is Mr. Bazalgette's view.

Examined by the *Committee.*

4617. Colonel *Napier Sturt.*] I suppose there would be a great objection, on the part of the existing Board, to your number being reduced?—No, not in the whole; I am only speaking my own opinion.

4618. You would not object?—I should not object, certainly.

4619. You seem to think that the number would be made too many if they were added to, but that we might reduce the 18?—I have a very strong feeling against a numerous Board.

4620. Mr. *Peel.*] What number of professional engineers are there on your Board?—None.

4621. If three were added, what class of men should you prefer; should you prefer gentlemen with local knowledge, without engineering capacity, or should you prefer engineers without local knowledge?—I think we have a very efficient engineer; I think most of us who have been on the Board some time have a certain knowledge of works connected with locks, and so on; I do not think there would be any special advantage in selecting engineers; of course a good engineer would be a useful member of the Board, as he would be elsewhere.

4622. Sir *G. Bowyer.*] There are six members of the Board representing special interests, I think?—Yes.

4623. Would there be any objection to reducing them to three?—I think that is rather a question for the Committee than for me; we objected originally to their being put on.

4624. Do you not think that three would be sufficient to represent those interests?—I think it would be very invidious in me, as a member of the Board, to say that I want to get rid of three of my colleagues.

4625. I do not mean to put it to you that you wish to get rid of them, but do you think that the business as regards those special interests would be as well done by three as by six?—I think I can say, that it would be as equally well done as it was well done when we had 12, before the six were put on.

4626. You objected to the six being put on, I think?—We did not personally object to them, or to their special interests, because, as you know, the shipowners pay half our income; our objection was solely to the increase of the numbers; in the way our Board works, I think we work better with a smaller Board than with a larger one.

4627. You are aware that the Metropolitan Board of Works is a very numerous Board?—The Metropolitan Board of Works is a very different body from ours; I once attended one of their meetings, and it seemed to me to be a sort of Parliament sitting; we do not transact our business in that way at all.

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4628. Lord *Eustace Cecil.*] You think there is a great difference between the interest of the steamboat proprietors and the interest which the Metropolitan Board of Works has in the river?—Yes.

4629. They pay tolls?—They pay so much for each call of their steamers.

4630. Mr. *Wilkinson.*] Have we not paid for the foreshore?—Every person who takes anybody else's land, of course, pays for it; if the Metropolitan Board of Works take our foreshore, of course they pay for it.

4631. Colonel *Napier Sturt.*] Can you tell us how the locks are let?—Ours are not let at all.

4632. You cannot tell us at all?—No; I have read the evidence before the Committee here; I do not know much about the Upper Navigation; I know it is in a very anomalous condition; there are tolls on the Upper Navigation.

4633. On the Lower Navigation they are merely taken over, and handed to the Board?—The way in which it is done is this, there are certain tolls for passing through the locks; we have men there who collect the tolls; there are some men who have a good many barges, who have a month's credit given to them; the money is directed to be paid to us, I think.

Jonathan Thorp, Esq., called in; and Examined by Mr. *Sargood.*

J. Thorp, Esq.

4634. I BELIEVE, in the absence of the Lord Mayor, you act as Chairman of the Board of Conservators of the River Thames?—Yes.

4635. How many years have you occupied that position?—Since the formation of the Board.

4636. You can speak from the year 1858 as to this list, which my friend, Mr. Wilkinson, was referring to just now?—Yes.

4637. Does your experience travel over the whole of that time?—Yes.

4638. Now, with regard to the constitution of the Board, were you also one of those who was satisfied that the number of 12 was sufficient?—I am satisfied that 12 was sufficient in number; I did not object to the addition of the representative of the shipowners.

4639. I believe the shipowners contribute pretty nearly half your income?—Yes.

4640. It did not seem reasonable, therefore, that they should not have a voice in the matter?—No.

4641. Being constituted as a Board of 18, did you see any necessity, practically speaking, for an addition to their numbers?—I think the business would not be any better done if you were to increase the number.

4642. Then you see no practical necessity for the increase?—Certainly not.

4643. Assuming that the Committee should think it prudent to make any addition to the number for any reason that may effect their own minds, do you consider that you would gain any advantage from having a member of the Metropolitan Board of Works on your Board?—No; I do not see that we should gain anything by that addition.

4644. Having regard to the nature of their business, so far as you are acquainted with it, do you know that it could in any way affect your deliberation on exclusively subjects connected with the river; have you any experience that can at all help you in it?—I am not aware. I have thought the matter over very carefully; and I think all the information necessary to enable the Conservators to manage the lower part of the river they have at the Board at present.

4645. I believe you divide your own jurisdiction within what you call the Upper and Lower Navigation, do you not?—There is the navigation below London Bridge, and what is called the Up-river Navigation; they were formerly separate.

4646. What you call your Upper Navigation, extends, I think, from Staines downwards?—From Staines to London Bridge.

4647. Does the part of the country up above Staines, for some miles down, include the question of dredging, preserving the banks, towing paths, locks and weirs?—All works necessary for improving the river navigation.

4648. Do you know of any distinction between those works for the purpose of the upper branch of your duties and those which have been heretofore performed by the Conservators, except the one question of there being mills, which, I think, you have not got upon your waters?—Yes; we have one mill at Chert-

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sey, and the improvements that we have effected in the upper part of the rive have been most beneficial to the millowners at Chertsey.

4649. Perhaps I may put it in this way, that the experience you have with regard to that one mill is that which would be applicable with regard to 20 or 30 mills, if you should find them up the stream?—I believe that the improvements we should make, if the jurisdiction were transferred to the Conservators, would be beneficial to the millowners on the river generally.

4650. Then you think the experience of your Board, as at present constituted, is amply sufficient for all new duties which may be imposed upon them by this Bill, if it passes into law, without the aid of any new experience?—I think we should be able to perform all the duties that might be imposed upon us with reference to the improvement of the navigation.

4651. With regard to the discussion and the Report of 1863, I think that has been under your notice?—Yes.

4652. Do you remember a paragraph in that Report, which runs thus: "But whatever may be the inherent defects of the Board's constitution, it is but justice to those who, during the last five years, have administered its duties, to state, that in the opinion of your Committee, their exertions have deserved the thanks of those interested in the River Thames." Do you remember that part of their Report?—Yes, I do.

4653. That, I believe, was before the six representative members were added to your number.—It was.

4654. It was the original exertions of the 12 which merited that encomium?—Yes.

4655. Perhaps it will not be amiss just to read the next paragraph: "With a revenue of about 40,000 *l.* per annum, they have, in the course of five years, entirely removed or greatly diminished all the shoals between London Bridge and Barking Creek, which narrowed the waterway and obstructed the navigation of the river; they have laid down, in well-chosen stations, secure and commodious moorings for vessels riding in the stream; they have organised and enforced a system of regulations on the river, which has greatly facilitated its immense and complicated traffic; they have done something towards the rectification of the channel; they have, as far as possible, protected the river from the practices of those who would make its bed the receptacle of mud and rubbish, and who poisoned its water with impurities. Finally, out of the capital fund at their disposal, they have erected at various points on the river banks improved piers and landing-places, which have not only afforded great accommodation to the thousands of passengers who daily crowd the highway of the Thames, but have opened to the lighters and small craft plying on the river an inshore passage, obstructed or blocked up by the former landing-places." Do you consider your Board is quite as well constituted now as it was then, and quite as competent to undertake the discharge of these duties?—Yes; the duties were very well performed then. I am bound to say that of my colleagues, and they have never been better performed since.

Cross-examined by Mr. *Phinn*.

4656. The proposal in the Bill is to add three?—Yes.

4657. I suppose you do not object very much to that, if the Committee think it desirable to have representatives for the upper districts?—I think if the upper part of the Thames is handed over to the Conservancy Board, that there should be some representation of that district, undoubtedly.

4658. Therefore it is not a question so much of principle as of detail; once admitting the principle, you will not quarrel with the detail, whether the Committee add three or six?—I think you should not increase the number more than is really absolutely necessary, because, by so doing, you turn it from a mere board of consultation to a debating party; I can hardly call it a society, but we shall have long speeches.

4659. We must trust to the vigour of the vice-chairman. I do not enter into the discussion between you and the Metropolitan Board of Works, except this. I believe when that Committee of 1863 examined into the constitution of the Conservators, as then existing, the claims of the Metropolitan Board of Works were brought forward by one or two gentlemen, Mr. Sidney Smith and others?—Yes, they were brought forward by somebody, I do not know who.

4660. I think Mr. Sidney Smith was one, and Mr. Fenning the other?—Not the Metropolitan Board of Works?

4661. Yes

4661. Yes?—That must have been the claim of the wharfingers.

4662. "The Metropolitan Board of Works ought to be represented, because they are obliged to go to the Conservators in carrying on their embankment?"—That was a mere opinion of his.

4663. I think Mr. Sidney Smith also urged the claim of the Metropolitan Board of Works?—A direct application was made to the Committee which sat afterwards, to add to the number.

4664. The Commissioners did not adopt that view in their report, nor did the Committee?—No.

4665. Now, supposing the Upper District of the river to be represented, do you think that there is any mode of making a vacancy in your Board, so as not to increase the members too largely; for instance, I think the original proposal was that you should have the control of the lightermen and watermen, was it not?—Yes; by the Bill of 1864, the control and jurisdiction over that class of trades was to pass from the Watermen's Company to the Conservators.

4666. When the Bill of 1864 was proposed, which added two representatives, it was proposed to put the watermen and lightermen absolutely under your jurisdiction?—Under the Conservancy Board.

4667. Repealing their special Act, and giving you the administration of all their affairs?—Repealing portions of the Act, but placing the watermen and lightermen under the Conservancy Board; their craft were to be registered at the Conservancy Office, and they were to contribute to the Conservancy funds.

4668. Their conduct was to be subject to the Conservators' supervision, and not of their own special court?—To some extent; there was a provision in the Bill that they should be represented.

4669. Then the Bill, as it passed, contained no provisions repealing or altering their constitution, but retaining the provisions giving them representation?—The Watermen's Company opposed the alteration, and they succeeded; the Committee thought then that the lightermen and barge owners should still be under the Watermen's Company; the Watermen's Company opposed that part of the Bill which required the watermen and lightermen to contribute to the Conservancy funds; the Committee agreed with them throughout that part of the Bill; and the only portion of the Bill with reference to the watermen and lightermen, which they altered was that portion which gave them two representatives.

4670. They still retain their separate jurisdiction?—Yes.

4671. The Watermen's Company still retain control over the members of the body?—Yes.

4672. And the administration of the funds raised by the body?—Yes.

4673. And the control over the conduct of the individual members of the body?—Yes.

4674. But they have two representatives at your Board?—That is so.

4675. They having special privileges on the river, by which they have a sort of qualified monopoly in the river?—That is so.

4676. Now, do you see any special claim, while they have their own separate administration, and their own separate control, for their members being present at the Board?—I stated in my evidence at that time that I saw no reason why the lightermen and watermen should be represented on the Conservancy Board; the gentlemen who have represented them are most respectable persons, and have done their best; but I still am of opinion that it is not at all necessary that they should be represented on our Board.

4677. So that if it is necessary to make vacancies in your Board with the view of keeping it within a limited number, you think that the watermen and lightermen have not such strong claims as probably the owners of shipping who pay tonnage dues?—Certainly.

4678. Now, let us take the proprietors of the steamers: there are 13 proprietors of steamers represented?—The owners of passenger steamboats on the River Thames, who ply on this side of Gravesend, are represented; the Board of Trade give us annually a return of the boats registered, and the owner of each boat has a vote, and I think that the constituency now number 13.

4679. What is the special interest of those gentlemen?—They are the owners of boats who carry passengers, as you know, most conveniently for one penny.

4680. Do you concur with what Captain Burstal said on Friday, that you spent more

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more on them than you got from them?—Our fund is not benefited or increased by them.

4681. Are you obliged to have dummies and piers for their accommodation?—Yes; we provide piers for the accommodation of the public, at which these boats call for their passengers.

4682. They pay a small sum for the privilege of embarking and disembarking?—They pay a small sum.

4683. Which hardly pays its way?—We intended just to cover the cost, and nothing more.

4684. I suppose my learned friend will say, in the interests of the public, that that is the main reason why the Metropolitan Board of Works should be represented, because their constituents run passenger steamers; the interests of the public will not suffer, even if there was not a member representing those 13 gentlemen on the Board, would it?—I can only give the same answer which I gave before the Committee in 1864; I then said it was not necessary that the owners of penny passenger steamers should be represented on the Board; they have been represented by a most respectable gentleman who has done his utmost, and behaved admirably; but I am of opinion that it is not necessary that they should have a representative upon our Board.

4685. Then the opinion which you expressed before you had experience of the presence of this respectable gentleman, remains the same, does it?—Yes, it does.

4686. Your Board, in point of fact, is rather an executive than a representative Board, is it not; you have to do a great deal, but you have very little taxation to levy, except for benefits received—Just so, only for services; I regard myself as a trustee with certain powers given by Parliament for the benefit of the public.

4687. It is, perhaps, rather an odd question, but perhaps you will allow me to ask you as to this system of paying members of the Board; do you think it is a good thing; it is not a very large amount, I believe?—Let me answer it in my own way, if you please; the payment is not so much in the way of remuneration for services, as really to cover expenditure out of pocket; the Board meets once a week; the committee, on Friday, always; and sometimes there is a committee meeting twice a week, and fortnightly, finance meetings; then it has been my practice to attend at the office nearly every day; it really would be unreasonable that this should be done for nothing; that we should pay our expenses out of pocket, attending to this important interest, paying our own way and doing all this for nothing; indeed, I have lost upwards of 500*l.* a year during the six years I have acted as deputy chairman, without one penny remuneration; I am quite sure it has been 500*l.* a year out of my pocket, therefore we asked the committee to make some moderate allowance for the attendance of the Conservators, and the committee decided to allow 1,200 *l.* a year; my colleagues get from 50*l.* to 70 *l.* a year; I get double that, about 130 *l.*

4688. Does that average about 25 *s.* an attendance?—Yes; it is preposterous to talk about remuneration for our services.

4689. If this Bill were to pass, and the jurisdiction vested in the Conservancy Board, you will have, I suppose, occasionally to go up the river to Oxford?—No doubt.

4690. Of course it would be desirable that some provision should be made for that purpose?—Some reasonable provision.

4691. Do you think that the constituency at Oxford is alive to these important interests provided for the Bill, and that the old Navigation Commissioners would really send men well qualified to your Board?—I really am not in a position to answer that question; I think that the Upper District, taken as a whole, should have somebody to represent them on the Conservancy Board.

4692. I believe that question was discussed, was it not, before the Committee which sat in 1863?—I do not remember.

Cross-examined by Mr. *Wilkinson*.

4693. I gather, from what you stated in answer to my learned friend, that there are upon your Board certain representatives of interests which now, in the interests of the public, you think that, if it were necessary to create a vacancy, might with advantage to the public be removed?—I would rather not put it in that

that way; there is the existing Board, and I have no disposition to interfere with it at all.

4694. You have given my learned friend an answer with reference to the watermen and proprietors of the steamboats; have you considered at all the proportion which the Corporation of London themselves bear on your present Board?—Yes.

4695. You are aware that there are seven, including the Lord Mayor and Aldermen?—Yes.

4696. I think you say that you yourself are the *locum tenens* of the Lord Mayor, and occupy the chair in his absence?—Yes.

4697. Are you yourself interested commercially in the Conservators?—I am not in business at all.

4698. In what way; are you a member of the Corporation on that Board?—I am a member of the Corporation.

4699. As a common councilmam?—Yes.

4700. Therefore, you represent the same interest which the Lord Mayor would represent, if he were present?—I stated, in reply to a question of Mr. Phinn's, just now, that I consider myself a trustee; I have been appointed by the Corporation of London, but, having appointed me, they have done with me; I am serving the public; I have certain duties to perform, which are defined in various Acts of Parliament, and I have certain responsibilities; I am responsible to Parliament and the public.

4701. So far as you personally are concerned, you are, in fact, one of the representatives of the Corporation?—I am a trustee appointed by the Corporation of London, and, having been so appointed, they have done with me.

4702. You have no interest whatever personally; I do not put that to you for one moment?—No; that is so with the Admiralty representatives, and the other representatives of the Board.

4703. The Corporation of London appointing seven, as they now exist, does it appear to you at all an unfair thing, that upon the principle of representation, another Board, representing a much larger area, should also have a voice at the Conservancy Board?—You are aware that for a very long period anterior to the Conquest, the Corporation of London were the Conservators of the River Thames; many Acts of Parliament passed for regulating the lower part of the river in the latter part of the last century, and the beginning of this century; and for regulating the traffic and increasing the power of the Conservators in the lower part of the river; all these powers were given to the Corporation of London by Parliament, as Conservators of the River Thames.

4704. The Act of 1863, as we understand, was a kind of compromise?—In 1857 there was a dispute between the Crown and the Corporation of London as to the ownership of the river.

4705. Mr. *Phinn*.] Do not let us go into that?—I will not go very deeply into it.

4706. Mr. *Wilkinson*.] I do not want to go into it at all?—There was a dispute between the Crown and the Corporation of London; that dispute was settled, and it was arranged and agreed that there should be a new Board of Conservators, that the Corporation of London should nominate seven members, the Admiralty two, the Trinity House two, and the Board of Trade one; that was the arrangement of the day, and it was understood that that should be a permanent arrangement.

4707. That being the arrangement resulting from the compromise between the Crown and the Corporation to which you have referred?—Yes.

4708. The question I put to you is independently of that compromise; do you think it is a fair thing that a body, representing so much less an interest, should have a larger voice at your Board than the body representing such a large interest as is represented by the Metropolitan Board of Works?—I do not think it at all necessary that the number of gentlemen representing business interests should be increased.

4709. There being 11 on the Board representing commercial interests, and not Corporation interests; is not that so?—I assume that the representatives of the Corporation mean those who are nominated by the Corporation, and not connected with commercial interests.

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4710. There are seven, and there are four others?—No, there are six others.

4711. Now about the duties; my friend has taken credit for the statement in the report as to the mode in which you conduct your duties; I find that one of those duties is, "to protect the river from the practices of those who would make its bed the receptacle of mud and rubbish, and poison the river with impurities?" —One portion of the duties of the Conservators has been, time out of mind, with reference to the quality of the water of the river.

4712. Does not that correspond with the duties which the Metropolitan Board of Works are called upon to discharge within their district?—That is one of the duties of the Conservancy Board; it is a duty which they have performed perfectly well; I have heard no complaint of any one case of misconduct upon their part in that respect.

Cross-examined by Mr. *Lopez*.

4713. You rather excited my curiosity, as you excited my friend's surprise, when you talked about a mill, because we had been told before that you had no mill on the Lower Navigation; where is that mill?—At Chertsey.

4714. Is it on the stream?—It is close to the stream on the Abbey Mill Branch.

4715. Is it in connexion with the lock?—No, it is below the lock.

4716. It is not in connection with it?—I believe not.

4717. What is the mill?—Chertsey Abbey Mill.

4718. Is it a paper mill, or what mill is it?—A flour mill.

4719. But it is not in connection with any lock?—I think not.

4720. Do you know that there are 29 mills on the Upper Navigation?—I have heard so.

4721. Are you aware that they are all worked in connection with locks? —Yes.

Re-examined by Mr. *Sargood*.

4722. Do you think your body of 18 will have any difficulty in comprehending the mystery of working mills in connection with locks?—I hope the improvements that will be made will be most beneficial to the millowners, and from all that I have been able to learn they undoubtedly will be so.

4723. You do not think there is any practical difficulty in your undertaking the subject, notwithstanding the proximity of the lock?—Not the slightest.

4724. You have been good enough to draw a distinction, and a very pointed and a marked one, between a trustee and a representative; now, there is no doubt that the six gentlemen who are authorised to sit on your Board by the last Act of Parliament, the one of 1864, are the representatives of commercial interests?—Yes.

4725. They are supposed to be there with the particular view of protecting those interests?—I suppose so.

4726. That is the difficulty?—No doubt.

4727. With regard to the 12 who were appointed under the previous Act of Parliament, of whom you are one, you say you look upon yourself in the light of a trustee?—Yes.

4728. To your knowledge, is not that the view which all those 12 gentlemen take of their position on the Board?—Undoubtedly, they are wholly unconnected with any particular interest; they are entirely independent, and the object is to do the best they can for the public.

4729. You are simply trustees of funds entrusted to your care for the benefit of the public, who are interested in their application?—Yes, acting under the powers of the Act of Parliament.

4730. We have heard somewhat of the unanimity of feeling of your Board; I will put it to you in this sense; is it not rather one of the points upon which you pride yourselves that you have no personal interests to serve, and no particular local interests that may influence your decisions; and you always look to the main benefit of the public in every question that comes before you?— Undoubtedly.

4731. Except so far as it happens that you are one of the seven nominees of the Corporation, do you consider yourself at all the representative of the Corporation

tion on the Board, or that there is anything in fact to represent?—No; I believe I said that the Corporation having appointed me trustee, they have done with me.

4732. I want to divest the subject of the idea which my friend Mr. Wilkinson attempts to throw into it, that the corporation have any interest to serve or represent by the presence of you gentlemen?—No; we make no communication or reports to the corporation of London as to the River Thames. We all meet on equal terms, the Admiralty representatives, the City representatives, and the Trinity House representatives.

4733. The Act of Parliament says that the Lord Mayor is to be one, and, there being only one Lord Mayor, that is not a matter of selection?—The Lord Mayor has been identified with the Thames Conservators from the earliest times. It was not considered desirable to sever him from the position of being head of the Conservators; but the Lord Mayor of London takes very little part in the proceedings: sometimes we have the honour of a visit, once in the year, when the Lord Mayor attends and pays his respects. It must be manifest that a gentleman without any previous acquaintance with the river, and almost ignorant of his duties, could not benefit us very much by his services; but it has been considered desirable that the Lord Mayor should be the head of the Conservators for many reasons, and I daresay that is right.

4734. With regard to the aldermen, there being more than two aldermen of the City of London, you have to select two?—The corporation nominate two.

4735. There are to be four common councilmen, and, seeing that they are a very numerous body, you have to select four?—They send four.

4736. That should not be called an elected body, because the Act says that four common councilmen are to have seats at the Board; therefore, all you have to do is to select amongst yourselves who shall be the members?—The Court of Common Council nominate the members.

4737. Having been elected, there is an end of the matter?—For four or five years.

4738. You have no communication with the Common Council upon the subject?—No.

Examined by the *Committee*.

4739. *Chairman.*] What was the reason for the Watermen's Company being represented at the time; do you recollect?—The Bill was introduced into Parliament by the Board of Trade, and it was proposed in that Bill to transfer some of the jurisdiction of the Watermen's Company to the Thames Conservancy Board. It was proposed that they should contribute to the funds of the Thames Conservancy Board, and that they should be represented. A portion of that Bill was opposed; that is, as to the transfer of the jurisdiction, and successfully, by Mr. Clerk, and the contribution by these parties to the Conservancy Board instead of to the Watermen's Company. That was opposed; and the only provision between the Conservators and the Watermen's Company which passed was that they should send two members to the Thames Conservancy Board.

4740. If the jurisdiction was not transferred, nor the contribution imposed on the Watermen's Company, why was the representation retained?—Some alteration took place within the last few days of the close of the Session, and the Vice President of the Board of Trade stated in the House of Commons that it would be better to take the Bill as it was, although it was not exactly what he wished, rather than surrender the benefits; and rather than that the Bill should be thrown out they had better take the Bill as it was.

4741. In fact, it was to get rid of opposition?—And of the rejection of the Bill, in fact.

4742. There was no particular reason for retaining that representation of two members?—Oh dear, no.

4743. Sir *G. Bowyer.*] Can you tell us exactly about these six gentlemen who represent the particular interests; I want to know exactly what the nature of the constituency is which they represent, and what the number of the constituency is, if you can state it shortly?—You mean the representatives of the different interests on the river.

4744. Yes, the six?—Two for the owners of ships registered at the Custom House.

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4745. Can you tell us at all the number?—They are a large constituency; the next are the barge owners and lightermen, who send two representatives.

4746. Are they a large number?—They are a large number; every owner of a barge on the River Thames registered at Watermen's Hall has a vote.

4747. The next is the owners of wharves, is it not?—Yes; I think they are 80 or 90.

4748. They elect two also, do they not?—One.

4749. How do you make up the six then?—The owners of passenger steamers elect one.

4750. Sir *M. H. Beach.*] I did not quite understand the reason on which you ground the representation of the City?—I tried to show you that formerly; in fact, for ages, the Conservancy of the Thames has been entirely with the City; when the alteration was made in the constitution of the Board in 1857, seven were nominated by the City and five by the Government.

4751. And then six were added?—Then, afterwards, in 1864, six were added, representing particular interests on the river; but, no doubt, the reason why the Corporation are largely represented on the Conservancy Board is this, that they have, time out of mind, principally had the management of the River Thames.

4752. Is there any reason why they should not be?—The only reason is that they perform their duty properly; they have given satisfaction to the public for centuries; in point of fact, there is no reason for disturbing them.

4753. By this Bill it is proposed to place under their jurisdiction the entire stream of the River Thames?—But you do not alter the duties of the lower part, from Staines to the sea; I stated that if you added to the upper part, it would be only reasonable that trustees should be nominated from the upper part who should form part of the Conservancy Board.

4754. Colonel *Napier Sturt.*] The Corporation of London would not like the number of seven to be reduced?—I think not; it would be very injudicious to reduce it.

4755. Sir *M. H. Beach.*] Suppose we were to diminish the number of the Board, and, in place of some of those who were removed, to add some representatives for the Upper District, would it be fair then that the Corporation should have as many as seven?—I think it would be most unfair to interfere with the position of the Corporation of London on the Conservancy Board; if you ask me why you should not, I ask you, why should you.

4756. Sir *G. Bowyer.*] The City have some ancient privileges conferred by repeated charters of the Kings of England, and they have always been appointed the Conservators of the river?—At the time the alteration was made, no complaint was made of the conduct of the Corporation.

4757. It was the result of an agreement made between the Corporation and the Crown, was it not?—Yes; arising out of a dispute as to the bed and the soil of the river.

4758. Mr. *Peel.*] Can you tell me whether the owners of wharves contribute toward the expenses of the river?—They do not contribute at all.

4759. Do the barge owners and lightermen?—They do not contribute at all.

4760. But the proprietors of penny steamboats do?—The penny steam boats pay for calling at the piers.

4761. Colonel *Napier Sturt.*] They have in return the piers kept up for them?—They are fixed, placed, and kept in order, and pier men appointed and paid; they have the requisite pier accommodation.

4762. Do the Corporation of London contribute towards the expenses of the river?—The Corporation of London do not contribute as the Corporation towards the expenses of the river, but in time past the members of the Corporation have contributed very largely out of their private property, for the improvement of the River Thames.

4763. Mr. *Sargood.*] Their contribution was the bed of the river?—I mean independently of that.

Captain *Edward Burstal*, R.N., re-called; further Examined by Mr. *Clerk*.

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4764. HAVE you extracted from the books the entries contained in the list which has been handed in, as showing the number of communications which have passed since the year 1858, down to the present time, between the Metropolitan Board of Works and the Thames Conservators?—This list contains the principal correspondence between the Metropolitan Board of Works and the Board of Conservancy during those years.

4765. A question has been raised whether there was not some correspondence on the subject of a vessel called the "Zebra"; will you explain that?—I do not think there was any correspondence with respect to the "Zebra"; the story of the "Zebra" is this,—the "Zebra" was a screw steamer going down the river in Limehouse Reach, with a quantity of spars towing on her starboard quarter; there was ice in the river, and she was unmanageable and did not steer well.

Upon the suggestion of Mr. *Phinn* it was agreed that it was unnecessary to go further into this matter.

4766. Mr. *Wilkinson*.] I will just ask one question upon this; do you present that list as an illustration of all the communications which have taken place, either by deputation or in writing, between the Metropolitan Board of Works and your Board?—I think it contains all.

4767. Deputations as well as communications in writing?—I think so; there may be some small things which are not included.

Mr. *O'Malley* then proceeded to address the Committee in support of the Petitions of Lincoln College, Oxford, and Mr. Danbe, against the Preamble.

The Reverend *Washbourne West* was called in; Examined by Mr. *Dale*.

Rev. *W. West*.

4768. I BELIEVE you are a Fellow of Lincoln College, Oxford?—Yes.

4769. You have been President of the College for a considerable number of years?—Thirteen years.

4770. You are well acquainted with the river properties of the College?—Yes.

4771. I think it is your duty to manage them and collect what money is due?—Yes.

4772. You know the lock at Iffley?—Yes.

4773. Can you state to the Committee the amount which you have received for several years past in respect of dues and tolls of that lock?—In the year ending Michaelmas 1851 the amount was 40 *l.* 14 *s.*, and it has gradually increased, until it now averages 50 *l.*; in the year 1863, I received 57 *l.* 4 *s.* 9 *d.* for the Lincoln College moiety of the old lock tolls.

4774. Yours is an equal half of the tolls?—Yes.

4775. Then, of course, Mr. Danbe's share is precisely the same?—Yes; this is the moiety, after paying 1 *s.* 6*d.* a week gratuity to the collector, but on this we pay to Iffley parish all the rates, and Mr. Danbe pays in St. Aldate's parish in Oxford all the rates on his moiety.

4776. What has been the expense for many years past of the repairs of this lock?—We do nothing to the lock; we repair the lasher; in the year 1857 and 1858 the expenses were 52 *l.*; we put new sheeting and new piles, and it is in a thoroughly good state; that is all we were bound to do.

4777. Sir *G. Bowyer*.] You were bound to do that?—We were bound to repair the lasher, because it is connected with the mills; we are mill owners as well; whether it was because we are lock owners or because we are mill owners I do not know.

4778. Do you consider that you receive this payment for keeping the lashing in order?—No, not at all.

4779. Mr. *Acland*.] Upon what is it received then?—It is property which has belonged to the College for more than 400 years, and I believe it was bought with benefaction money at the time; I have the oldest title deeds.

4780. Sir *G. Bowyer*.] What is the date of it?—1302, the 13th Edward I.

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4781. What is it granted for?—It is a gift from Christina, the wife of John Culvert, to her son.

4782. Mr. *Phinn.*] A gift of what?—It is not a gift of old lock tolls; I will read it: "Noverit universitas non qd cum dedissem Andreo filio meo capitale messuagium meum in Church yeftley totam terram meam arabilem cum molendino meo piscaria privata cotag. cum hammiss ac insulis et omnibus aliis rebus ad dictum messuagium quoquo modo spectantibus pũt in chartâ siti inde confectâ plenius continetur me dedisse concessisse et omnino quietum clamâsse totum instaurum meum ut in botbus vaccis equis duabus gallinis et omnibus aliis rebus quibuscunque et omnia vasa ac utensilia dicto messuagio molendino piscario et omnia alia ut prædictum est spectantia. Dat Oxon. anno regni Regis Edvardi Tricesimo."

4783. Sir *G. Bowyer.*] Is that the root of your title?—Oh, no; but it is the earliest title deed in our treasury; Lincoln College was founded in 1427.

4784. That is the earliest deed?—Yes; I should state that in our Calculus every year, from the very earliest times to the present date, every year there is this entry: "*Domino Regi* v. *Domino Regina pro Molendino apud Iffley pro Librà piperis*, 2 *l.* 12 *s.* 4 *d*"; it was a grant from the Crown originally; we pay now every year 2 *l.* 12 *s.* 4 *d.*, in lieu of a pound of pepper, to Donnington Hospital; we are the owners of a mill and some meadow land on the Iffley side of the high land through which the new pound lock is made, and certain land on the Berkshire side of the river; we are the owners of the towing path for about 26 chains, and we receive from the Thames Navigation Commissioners, who rent it from the mill, 26 *s.* a year for that portion of the towing path.

4785. Mr. *Acland.*] I do not quite understand how that document which you have read proves that the tolls were conveyed to you as the property?—The tolls belong to the mill; I simply brought that as the oldest document in the College treasury which relates to the mill property at Iffley.

4786. Mr. *Dale.*] I believe the original trust was with reference to the weirs and lashers belonging to the College; do you know that fact?—I do not know any fact beyond the Act of Parliament; beyond the fact that we have received the tolls from the time of that Act of Parliament, about 15 or 16 years since; I have received them for the time that I have stated.

4787. Sir *G. Bowyer.*] Can you explain how the right of the College to these tolls originated, before the Act of 1771?—I suppose that they dammed up the river at Iffley, so that it was made navigable, and the millers flashed them along; we know that the river is kept up at Sandford and at Iffley by the weirs and the mills.

4788. Your tolls before that Act of Parliament, which were taken by Lincoln College, were taken on the river, and not on any private water?—No, from the bed of the river.

4789. Mr. *Dale.*] That is to say your right to those tolls was conferred by the Act of 1771?—Yes.

4790. At all events since the passing of that Act, then, you know that the tolls have still been continued to be received by virtue of the provisions of that Act?—Yes.

4791. In point of fact, therefore, you have a Parliamentary title to the tolls?—Yes.

4792. Whatever your ancient right may have been, you have now a Parliamentary title to those tolls?—Yes.

4793. You find they have been received ever since the passing of the Act of 1771?—Yes.

4794. You are now receiving them?—We are now receiving them without diminution, except paying the rates in Iffley parish; we pay the church rates, the poors rates, and so on.

4795. Sir *G. Bowyer.*] It appears that the case of Lincoln College is different from Mr. Danbe's; Mr. Danbe says he receives the tolls as a compensation for having been deprived of a right which he enjoyed on a private stream; but it appears that Lincoln College take the tolls from the river itself?—From the river itself.

4796. That is a different case altogether?—It is the ordinary case of an old lock owner.

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4797-8. Sir *G. Bowyer.*] There is nothing in this case to distinguish it from the ordinary case of an owner of tolls?—Except this, that I think whereas generally the tolls have fallen from 7,000*l.* a year to 3,000 *l.* a year, ours have increased from 40*l.* to 50 *l.*

4799. Sir *G. Bowyer.*] How is that?—Many Oxford people whom I have mentioned it to say that it is on account of the pleasure boats; but that is not so; we received no part of this from the pleasure boats; it is wholly from the barges; I believe the reason is this, that the traffic has increased from Oxford to Abingdon, Benson, Wallingford, and Pangbourne; that part of the Thames navigation is affected by the Oxford Canal, and Derbyshire and other coal is brought along it, so that it comes through our lock; it is the best lock on the river.

4800. Mr. *Acland.*] Do you happen to know at all in general terms what is the amount derived at Iffley Lock from all sources?—No, I do not; the engineer tells me that it is the best lock on the river.

4801. All pleasure boats pay a toll, do they not?—Yes; I think I did see in the collector's books that he was receiving about 24 *l.* from the Commissioners when he was paying me about 10*l.* That was about the proportion.

The Committee suggested that Mr. Danbe's case should be proceeded with.

Mr. *Daniel Godfrey*, re-called; further Examined by Mr. *Dale.*

Mr. *D. Godfrey.*

4802. You are solicitor for Mr. Danbe?—Yes.

4803. You are acquainted with his title?—Yes.

4804. I believe it is a very ancient title?—Yes. The first deed I have relating to his property is dated the 22d of April 1757; therefore he must have been in possession before that time; a mortgage was executed upon his property.

4805. Mr. *Phinn.*] Will you tell us what the parcels are in that deed?—I can read you the parcels from a modern deed; that deed is not here.

Mr. *Phinn.*] It is no use putting in a deed unless we know what the parcels are. The parcels are recited in the modern deed correctly.

4806. Mr. *Acland.*] Where is this property?—It is half-a-mile below Oxford, between Oxford and Iffley; that deed has gone out of our possession, but this is a true copy of the parcels.

4807. Mr. *Phinn.*] How do you know that?—I know it in this way, that 7 a. 3 r. 4 p. of land shown on this plan from A to B, which were his own private property, have been dealt with in deeds since the year 1857; that is, land for which this compensation will be claimed as being in the possession of himself and ancestors.

4808. Part of the river, you mean?—From Long Bridges to a place called Winsome Lays; the tolls, since I have had to do for this property for 20 years, have averaged upwards of 50 *l.* a year; for the last year, from April 1864 to April 1865, the sum received was 52 *l.*

4809. What we want to know is, what was the origin of this title?—The title was acquired under Act of Parliament, in 1771.

4810. I mean before the Act of Parliament?—That is a period beyond which my memory does not extend.

4811. Your case is, that there was a toll taken before the Act of Parliament on private waters belonging to Mr. Danbe; but the Act of Parliament took away that toll so taken upon private water by obstructing the navigation of that private water, and preventing traffic going through it, and thereby diverting the traffic from Mr. Danbe's private water, and that in consideration of that, as his private right was interfered with, this toll was given to him at Iffley Lock; is that so?—That is so.

4812. Mr. *Acland.*] By whom was this toll paid; is it paid by all the boats passing through Iffley Lock?—Yes.

4813. And they pay the toll separately to you, as distinguished from any other toll?—Yes, at the rate, I think, of 1 *s.* 11 *d.* per barge.

4814. Sir *G. Bowyer.*] We have heard nothing about this private water before?—I can only tell you that it has been dealt with for more than 100

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years as private property, between the points marked A and B on this plan, containing 7a. 3r. 4p.

4815. Did he before the Act of Parliament receive a toll for that part?—He did.

4816. Did the land each side the water belong to him?—Not all; many of these little islets belong to him (*referring to the Plan.*)

4817. How do you make out that this stream was his private property?—Because it has been the subject of conveyance, so much land covered with water.

4818. How do you prove that?—I prove it by the deed which I have here.

Cross-examined by Mr. *Phinn.*

4819. Is there any plan to any of your deeds?—Yes.

4820. I should like to see the plan of your deeds?—I have it not here.

4821. I want to know where the navigable course of the river is now; will you show that on the plan?—Then I will show it on the large plan; it runs along here (*pointing it out on the Plan*).

4822. That is the navigable course of the river as it now is?—Yes.

4823. That is clearly a cut made by artificial means, is it not?—I believe so, under the Act of Parliament.

4824. Then there is another course, that crooked course, is there not?—Yes.

4825. Is that with the weirs on it?—Yes.

4826. That is the land which you call land covered with water?—Just so; from A to B.

4827. In truth and in fact, was not that the old navigable course with the addition of this other line, the new course which the Conservators substituted for it?—Yes.

4828. Along the old course whatever navigation could or did go?—Yes.

4829. And when the new cut was made under the authority of the Act of Parliament, the navigation that used to pass along that tortuous course was diverted to the straight course?—I apprehend so.

4830. That is your case, is it not?—I understand it is.

4831. You take tolls from the lock on the new course in substitution of the tolls that you get from letting the navigation through the waters of the old course?—Yes; under the Act of Parliament of 1771.

4832. Can boats still navigate the old course?—No, they could come on round by Iffley, but they cannot go through the weir.

4833. Sir *G. Bowyer.*] Can they navigate or not?—Not through the weir.

4834. Mr. *Dale.*] Mr. Danbe's land is mortgaged, is it not?—Yes.

4835. Can you state the amount of mortgage?—It is mortgaged for 230 *l.*, to Mr. Thomas Fairbrother, who is one of the petitioners.

4836. Is it a mortgage of the tolls?—The tolls are not mortgaged.

4837. Sir *G. Bowyer.*] Then I understand that the tolls are not the subject of the mortgage?—Yes; he has sold all the property round about him, keeping the tolls.

4838. Sir *M. H. Beach.*] Can you prove that that cut was a cut made for the purpose of the mill, or anything of that sort?—I cannot prove that.

Tuesday, 26th June 1866.

MEMBERS PRESENT:

Mr. Acland.	Mr. Neate.
Sir Michael Hicks Beach.	Mr. A. W. Peel.
Sir George Bowyer.	Colonel Napier Sturt.
Lord Eustace Cecil.	Captain Vivian.
Mr. Milner Gibson.	

THE RIGHT HONOURABLE THOMAS MILNER GIBSON, IN THE CHAIR.

26 June 1866.

The Petition of the Provost and College of Eton against the Bill was read.

Mr. *Liddell*, Q.C., appeared as Counsel in support of the Petition.

Messrs. *H.* and *W. Toogood* appeared as Agents.

Mr. *Johnson* proceeded to address the Committee in support of the Petition of P. Ibotson and Sons, and others (paper manufacturers), against the Bill.

Mr. *John Evans*, called in; and Examined by Mr. *Johnson*.

Mr. *John Evans*.

4839. You are a Fellow of the Royal Society, I believe?—Yes.

4840. You are a partner in the firm of Dickenson and Company, of Nash Mills, in Hertfordshire?—I am.

4841. I believe you have no interest, except as a manufacturer of a similar commodity, in the particular district with which we are dealing?—I have no interest in the district; I am President of the Association of Paper Manufacturers of Great Britain and Ireland, and, as such, take an interest in the rights of my fellow manufacturers.

4842. I think you yourself have been engaged in the manufacture of paper for a period of 26 years?—I have.

4843. You have paid a great deal of attention to the natural laws which regulate the flow of water in rivers, and to the drainage question generally?—To some extent I have done so.

4844. I dare say you have read the Report of the Commissioners to which we have more than once made reference?—I have read it, and also the Minutes of Evidence which relate to it.

4845. And you have heard or read most of the evidence that has been given before this Committee?—The greater part of it; not all.

4846. Now, there is no doubt, as has been proved before the Committee, that the question of tainting the water by the process of paper manufacture is entirely of secondary importance to that of sewage?—It is so stated in the Report, and I quite agree with that view of the case.

4847. Now, the process of paper manufacture, in its different stages, is described in this Report of the Commissioners?—It is.

4848. I believe we may take it approximately, at all events, to be correct?—You may.

4849. I believe you differ altogether in the conclusions at which the Commissioners have thought proper to arrive?—Entirely, as to the practicability of the remedies suggested.

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4850. I will take you shortly through the different processes; the first refuse is that which is called the dusting of the rags?—The first is the refuse from the cutting and dusting.

4851. What the cutting is I do not know; that is merely when the rags first come, I believe?—It is merely the dry, fluffy refuse.

4852. Does that at all find its way into the river?—In no case, that I am aware of.

4853. *Chairman.*] What do you do with it?—We generally pile it in heaps, with weeds and other things, and make it into manure, or else a portion of it may be burnt.

4854. Mr. *Johnson.*] It never does, as a matter of practice, find its way into the river with your knowledge?—Not to my knowledge.

4855. It is of no interest or advantage to the manufacturer that it should?—No.

4856. Lord *Eustace Cecil.*] You have no difficulty in finding land for this purpose?—It is very often difficult to get the neighbouring farmers to cart away the manure arising from paper mills, at a profit; I had a large heap, and I found there was a difficulty in getting rid of it.

4857. Still you have been in the habit of selling it?—We cannot sell it; they will sometimes fetch it away.

4858. You have been in the habit of putting it over the land?—It is put over the land.

4859. Mr. *Johnson.*] You are speaking now only of the dusting?—Yes.

4860. The fluffy matter which results from the first process of dusting?—Yes.

4861. Colonel *Napier Sturt.*] Are you speaking of the paper mills generally?—I am speaking of those mills with which I am personally acquainted.

4862. Are you speaking of the mills on the Thames?—No, not of those on the Thames; my knowledge of mills on the Thames is *nil.*

4863. Mr. *Johnson.*] I was going to ask you an interpolative question rather, which occurred to me from something that has been said; esparto grass, which is a Spanish grass, used now in the manufacture of paper, is of modern introduction?—It is.

4864. Can you tell me whether it is used, to any extent, by the mills on the tributaries of the Thames?—I believe that among those paper makers, who have signed the petition, the majority do not use any esparto grass.

4865. The second refuse is the lime, which is causticised; it is the mixture of carbonate of lime, and lime which arises from the causticising of the soda?——

4866. Sir *G. Bowyer.*] What is causticising?—It is in order to absorb the carbonate of acid from the carbonate of soda, so as to render it caustic; the lime is used for that.

4867. Mr. *Johnson.*] That is the second refuse, is it not?—Yes.

4868. Is that at all sent into the river at present?—If it be taken in a moderately dry state, in all probability it is thrown on a refuse heap, but if it is in a liquid state it drains into the river.

4869. It goes through the drains into the river?—Yes.

4870. I think their suggestion is to drain into a large pit, is it not?—I think it is; I will just mention that this refuse hardly arises at all, inasmuch as the soda is not causticised on the spot; instead of buying ordinary soda, they buy soda which has been causticised elsewhere.

4871. Of course there may be differences in different mills; but, as a rule, do you find there are the means of providing those pits, and this land, for the purpose of evaporation, or the contrary?—Certainly not; as far as my experience goes, it is very rarely the case that there is any vacant space to be taken in the neighbourhood of a paper mill; they are very often on islands, where the space is limited.

4872. *Chairman.*] Will you look at Question 3379?——

4873. Mr. *Johnson.*] "What do you do with the waste products?—We let the liquid portion run into the river; the solid portion we retain on the land." That is what I understand you to say, that sometimes it is in a solid state, and then it is thrown on a heap, but not when it is in a liquid state?—Yes.

Mr. *Phinn.*] Whilst you are upon that, may I ask you to read about four questions more?

Mr. *Johnson.*] "Does the liquid portion contain any ingredients poisonous to fish?—We do not find it so; we find that there are as many fish now as there were when we first went there. Have any complaints been made?—Yes, there have been complaints from one person only, Colonel Blagrave: he has complained to us, and also written letters to the Reading papers, complaining that the fish were killed, and that the cattle refused to drink the water. Is it possible by any process to prevent that liquid going into the river?—It would be possible to prevent the waste liquid going into the river as it does now, but I do not think it would be necessary to prevent its going in altogether; we can filter it, and we are about to erect some reservoirs for that purpose; the water will then leave behind all the organic matter." That is the evidence of a gentleman who has a mill at Sheffield.

Mr. *Phinn.*] No, he is a gentleman on the Kennet, about Reading, and would be affected by the provisions of this Bill.

Mr. *Johnson.*] He follows that out at Questions 3459 and 3460. "Have you any land attached to your mills?—Yes. Of what area?—About six or seven acres. Does it lie in such a position that you can readily get upon it this waste from the paper?—Yes, it lies close. You will utilize it or filter it upon your own land?—Yes; the ponds would be as much for settling as for filtering."

Mr. *Phinn.*] What I want to call the attention of the Committee to is this, and I may do it now in order to preserve the sequence: "Does it contain any material that would be injurious to vegetation if it were put on land as it leaves your works?—It would be rather beneficial to the land; it would not kill vegetation, for, whatever it collects on the banks, vegetation is very rich all round it; it is like many other manures, put on injudiciously it would do mischief, but applied judiciously it would be beneficial; that is only my opinion."

4874. Mr. *Johnson.*] That quite accords with what you say, Mr. Evans, does it not?—I perfectly agree with what is there said; I say if lime could be recovered in a moderately solid condition, and not allowed to run into the river, then the lime might be placed in tanks, but it would be necessary to have land on which to construct the tanks.

4875. You see that the gentleman whose evidence has been referred to had land in his own occupation adapted to that purpose?—Yes.

4876. You say that the majority of the paper manufacturers have no such land available for such a purpose?—As far as I know, they have none.

4877. Is lime an expensive commodity?—It certainly is.

4878. Therefore you would economise it as far as you could?—Of course, no paper manufacturer will make waste if he can avoid it.

4879. Supposing it is allowed to pass into the stream as you have described, what effect would it have upon the water, chemically?—It would almost immediately be converted into carbonate of lime or chalk, and have no noxious effect whatever.

4880. You are familiar with the subject chemically, and you say that the effect of the admixture of this lime with the water of the River Thames is not noxious, but of course that depends upon the volume of water?—It depends partly upon the character of the water into which it is emptied; in the Thames water there is already present a considerable amount of carbonate of lime in solution, and by the action of the lime water it is immediately converted into carbonate of soda, which is perfectly innocuous.

4881. But, to a certain extent, carbonate of lime is not prejudicial in any way, but is beneficial in water?—It is certainly beneficial in drinking water, that is to say, if there is not an excessive quantity.

4882. Colonel *Napier Sturt.*] It kills all the fish, does it not?—In the River Thames the quantity of carbonate of lime is about 13 grains to the gallon, and in the best chalk stream it is 18 grains to the gallon; it is one of those substances which have the effect of purifying a supply of water.

4883. Mr. *Johnson.*] It hardens the water, does it not?—That hardness is removed by boiling, to a great extent.

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4884. Just take the words of the Bill itself; would you say that the effects are in your judgment not at all to deteriorate the quality of the water; might it not in the milder form be considered to be chemically innocuous, and might it be considered as not injurious to water?—There is no doubt that if lime were emptied into the river evidence might be given, and truthfully given, that it did injure the water at that spot, but after it had gone a short distance down the stream, any injurious effect would entirely have passed away.

4885. That is as regards the second refuse arising from the process of the manufacture of paper; the third refuse, I think, is the alkaline waste liquor with the matters dissolved in it, that is to say, from the rags, where esparto grass is used, and the washing water from the engine?—It is there, I think, that Professor Way sees the principal difficulty.

4886. It is with regard to this, I think, that suggestions are made of disposing of this liquor by two modes, the one by evaporation, which we have spoken of, and the other by distributing it in a liquid state over meadow land?—Exactly; in the Report a distinction is drawn between the water from the boiling, and the water resulting from the washing process; it is principally with regard to the water from the boiling that they make these suggestions.

4887. That is to say, I suppose, it is afterwards that the pulp has been so much washed and so clean, that the quantity of organic matter is greatly diminished, and so it becomes comparatively immaterial?—By the washing process at first a considerable amount of extraneous matter is removed, but it is carried on until it becomes an absolute minimum, and hardly anything goes away.

4888. So that, in point of fact, it is the first run that is material?—The greater part of the extraneous matter goes off with the first washing.

4889. *Chairman.*] You admit that the alkaline liquor is, to a certain degree, injurious to water?—It depends entirely on the degree in which it is present; if it is present in a small quantity only, I do not consider that it is in the slightest degree injurious.

4890. Is not any quantity of it injurious?—It is a question of dilution; there are a variety of things which, if taken, absolutely are injurious to health; but if they are properly diluted, they are not only not injurious, but to some extent may be beneficial.

4891. Mr. *Johnson.*] Now, as regards the remedy for this, whether the quantity might be excessive, or whether it might be thought to be excessive, the evaporation or distribution of it over land, as you say, pre-conceives the notion that the parties who are to apply the remedy must have the means of doing so?—Exactly.

4892. You do not find any provision in this Bill for compulsory power to acquire land; can you say, as a rule, to the best of your knowledge, that they do not possess it?—They do not.

4893. I should like to ask you, independently of that, or the process of evaporation, whether you think that, as a matter of expense, it could be carried on by the manufacturers?—I think that in certain cases the process of evaporation may be, and will be, adopted by paper manufacturers with advantage; but to do that implies two conditions; first, as I have said before, that of having the necessary space in which to do it, and, I may also add, the necessary capital for erecting the works; and, secondly, that there shall be such a quantity of alkali present in the boiling liquor as to make it worth while to recover it.

4894. Therefore, you have two considerations, namely, the cost of coal in the one case, and the amount to be recovered in the other?—Yes.

4895. I do not know what you say with regard to mills on the banks of the Thames?—I think that it is possible that on the banks of the Thames, where a mill was using esparto in large quantities, the evaporating process might be adopted, but there again it is a question of whether by avoiding emptying this refuse into the stream, you would not run into the equally great nuisance of polluting the air by burning the residua.

4896. In fact you might be creating a greater nuisance on land than you would be inflicting by turning the alkaline liquor into the water?—Yes.

4897. Sir *G. Bowyer.*] Can you inform us what the chemical effect of burning would be; what gases it would evolve?—I am not prepared to say exactly what the effect would be, because I have not seen the process myself; but I have been

been informed that, during the process of burning, the smell emitted is very objectionable indeed; it is the combination of esparto and alkali; it is simply the destruction by distillation of the refuse matter of esparto, and it has a peculiarly disagreeable odour.

4898. It may be disagreeable without being injurious?—I think anybody doing it near an inhabited house would be liable to an action at common law for a nuisance.

4899. Are there generally inhabited houses close to mills?—Very frequently.

4900. *Chairman.*] This Report speaks of alkaline liquid as being very useful manure for meadow land?—Yes.

4901. Mr. *Johnson.*] You reduce that which is liquid by the process of burning to solid matter, which is then put on land; that is the evaporation?—I will explain; there are two processes suggested in the Report of getting rid of this liquid; the one evaporation, and the other distributing it over land; in the case of evaporation, the liquor is caught and placed in evaporating pans, and by the action of heat is reduced to a pasty consistence, which is afterwards burnt and recovered, so as to be used again; in the other case, the liquor is distributed over the land without such boiling down.

4902. *Chairman.*] Would not the farmers of meadow land in the neighbourhood be glad to have it?—The difficulty is for them to get it; it is considerably diluted; it is of no use for their purposes; as I said before, I believe where coals are moderately cheap, the evaporation process will be adopted where it can possibly be; all I say is, it is not universally applicable even in the case of esparto.

4903. Sir *G. Bowyer.*] It is difficult for the farmers to get it?—It is very difficult, in the first place, to carry away the water, you have to send a horse and cart to fetch it away, unless you set up works for distributing it over land, for which it will be necessary to incur a very great outlay.

4904. Mr. *Johnson.*] With reference to the disposal of the alkali by evaporation, I understand you to say that where esparto is used a greater amount of alkali is necessarily used also?—Yes.

4905. In that case it might be necessary to endeavour to recover the alkali by the process of evaporation?—Exactly.

4906. But where rags are used, so much less alkali is contained in solution that it would not answer there, because the quantity which would be recovered would be so small?—It would not only not answer, but it would involve a ruinous expense to the paper-makers.

4907. At Question 2286, this question is asked of Mr. Routledge: "Have you tried the process introduced by Dr. Richardson, of Newcastle?—No, but he is a co-patentee with me; the process will never answer down here, because of the price of coal"?—Exactly.

4908. Do you concur in that, that if you had to apply it to that which is the staple trade of your district, namely, the manufacture of paper from rags, that the price of coal on the one hand, and the minimum quantity of alkali which you would recover on the other hand, would render it, commercially speaking, impracticable to be done?—Mr. Routledge's answer referred to recovering alkali from esparto.

4909. How is that, even from esparto you could not do it down there?—Even from esparto it would not answer, on account of the price of coal, but with regard to rags it is evident it cannot by any possibility answer, inasmuch as there is not more than one-eighth part of the quantity of alkali used with rags that there is with esparto.

4910. I understood you to say that this being the principal process adopted by the manufacturers in this district, that it would not answer on account of the quantity of alkali to be recovered being so small?—I have made a calculation what the cost would be to evaporate from a mill using 15 tons a week; I find that the water for boiling the rags and cooling the boiler, both of which would be materially strong elements, and the colouring matter, the soda, may be taken as at least 10 times the weight of the rags; that would give 150 tons of water per week to evaporate, and to do that it would require about 20 tons of good coal, such as would cost near London, say, 20 *s.* per ton, so that the annual cost to the papermaker for evaporating that liquor from the rags would be 1,000 *l.* a year, irrespective of the cost of the plant, labour, and the repair of the evaporating plant, and interest.

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4911. What would be recovered in weight of alkali in soda; what would be its value?—I have calculated that a mill of that kind would pay for its alkali about 300 *l.* a year; you will possibly recover 200 *l.* a year to set against that 1,000 *l.* a year outlay, so that 200 *l.* a year would not cover the cost of labour and repairs.

4912. *Chairman.*] Is this the alkaline liquor from rags?—Yes.

4913. What do you say with regard to esparto?—With regard to esparto, I say that, under certain circumstances, it is possible to do that with advantage, and I believe it will be done; but to bring any compulsory powers to bear, such as making all mills alike evaporate, whether they used esparto or rags, would be simply ruining the paper-makers.

4914. Sir *G. Bowyer.*] Will esparto grow in this country?—I believe there is grass of a somewhat similar character, but it is not so applicable to the paper-making business.

4915. Is the supply of esparto abundant and cheap?—The supply of esparto has been up to the present time constantly increasing, and no doubt it is a very cheap material to use in aid of rags.

4916. Mr. *Johnson.*] Now, I think we have done with that part of the subject which relates to the loss that would result from increasing the evaporation; will you just answer the question as to the mode of distribution suggested over the adjacent land?—In the first place, that also would imply having sufficient space to collect the liquor, and in the next place it would involve your having accessible land at your disposal, and you would also require to have a certain amount of power, and there would be certain expenses incurred in distributing it over the land.

4917. But it always implies that which many of them do not possess, and have no power under this Bill of providing, that is to say, an area adequate for the distribution of this, even if it were worth saving?—Exactly; I may also add, that if pumping was necessary, there would be an absorption of power, and you would require power to lay down pipes over people's land, to convey it to the land that you are about to irrigate.

4918. At times, the Thames is not superabundant in its supply of water; can you tell me how much water would be actually removed from the bed of the Thames, and not returned to its course?—I can give you the same sort of answer with regard to that; if you take this alkaline liquor, you must dilute it to some extent, otherwise, if it is from esparto, the alkali is so powerful that it destroys vegetation; to do this, I presume, it would be thought desirable to add washing water (which also, under this Bill, would be said to tend to injure the water of the Thames) to the boiling water; it is in evidence that washing water, in fact, the water taken by the manufacturers of paper, is in the ratio of 1,000 tons of water to one ton of paper, so that a mill making 12 tons of paper a week, would take 10,000 tons of water a week, or 3,600,000 tons in the course of a year, that would be so much diverted from the stream, so that the millowners below might bring an action against you for diverting the water.

4919. And that is the necessary consequence of one of the remedies suggested?—If carried out in the way in which it would be most beneficial to the land, I believe it must be properly diluted; I had better say this, that in making that calculation, I have taken into account the washing water; and it may be a question which will always arise, whether that is held as tending to injure the water or not.

4920. The washing water might be held to tend to injure, in the words of the Bill, and if that washing water goes with the alkaline liquid, the amount will be from one mill what you have just given as the quantity?—A mill producing 12 tons of paper a week would give about 3,600,000 tons a year.

4921. Is that the average quantity?—Yes.

4922. What I ask you is this; at present, all the water, as I understand, which is used for the purposes of the manufacture at the mill is restored to the bed of the river, and, in fact, more, I think, because you use wells for some of the processes of manufacture, and there is the addition of that?—I hardly consider that the well water is any actual addition to the stream; that is simply made to come up at one place, which otherwise would come up at another; at present all the water that is carried away does not revert to the stream.

4923. I find

4923. I find this at Question 659: "At the Pennicuick Mills of Messrs. Cowan, near Edinburgh, they make about 40 tons of paper per week, and they gave me, as a fact, the other day, that they use in the cleaning of that paper and other purposes about 500 gallons per minute, for 24 hours daily; that would be about 7,200,000 lbs. of water a day, or 560 lbs of water used for each ton of paper; that is merely for the cleansing"; can you tell me what proportion a pound of water bears to a gallon?—It is the tenth part of a gallon.

4924. The same observation ought to be made as to hot water, that if it is to be sent away as waste water it will abstract so much from the supply of the River Thames?—It would.

4925. I think we may now come to the next refuse, which is the fourth and fifth, that is the solid residuum from the bleaching?—The fourth refuse is the residue of the bleaching powder, and the fifth refuse is the bleaching powder itself.

4926. That is by bleaching salts, is it not?—That is what is commonly known as chloride of lime.

4927. That is never thrown in its natural state into the river?—Never deliberately, for it is certainly a very expensive material to use.

4928. I may just ask you this: I think there was some evidence given of fish being destroyed near Nuneham, by Colonel Harcourt; I do not know whether you know the facts; is there any doubt that that must have resulted from some accidental cause, such as some temporary mismanagement, or some exceptional cause or other?—There is one thing that I feel confident of, and that is, that the fish could not have been killed four miles from the river; but if any of them were killed it must have been immediately at the mill, and floated down to Colonel Harcourt's place, and giving him the notion that they had been killed there.

Sir *G. Bowyer.*] I thought Colonel Harcourt said that the fish were killed, but not at Nuneham.

Mr. *Phinn.*] Yes, at Sandford.

Sir *G. Bowyer.*] He did not say that the fish were killed four miles off.

Mr. *Johnson.*] No, I do not think he did.

Mr. *Phinn.*] What he said was this: "I wish to mention one point, namely, the injurious nature of the ingredients which at Sandford Mill are now turned twice a week into the water; we live several miles below it; the water comes down even as far as us, which is perhaps four miles, in a regular state of froth; the whole river is covered with froth, and the fish are killed.

Mr. *Johnson.*] That was an exceptional case, that had arisen from some mismanagement or other,

The *Witness.*] I believe Professor Way stated as much in his evidence.

4929. Mr. *Phinn.*] It was suggested to him, but Colonel Harcourt talks of it as a regular thing?—That must be some exceptional matter.

4930. Mr. *Johnson.*] At all events, let me ask you, as a matter fact, is this bleaching liquid ever sent in such quantities, except in some exceptional instances such as that, as at all likely to effect the purity of the stream, in your judgment?—In my judgment it is never emptied into the stream in such a condition as to injure the stream, unless it may be accidentally; it is too expensive to be used in that manner.

4931. Are not its deleterious properties spent in the very operation that it has to go through before it is discharged at all?—The greater part of the chlorine is decomposed during the bleaching process, but very little goes away from the liquor during the bleaching process; what little goes into the stream is almost immediately rendered innocuous, and, if there is any organic matter at all, the presence of the bleaching powder has been beneficial in purifying the stream.

4932. It is this very ingredient that was so offensive here opposite in the Thames, from the animal matter and other impurities which were contained in it;

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it; it is that which was cast into the river for the purpose of purification?—It was.

4933. It is the chloride of lime that becomes converted into a muriate?—It does.

4934. So it first comes, as I understand, in a very harmless state into the river, from having been spent in the process in which it is applied; but if there are any properties in it afterwards they are converted afterwards, and this, which is chloride of lime, by contact with other substances becomes a muriate and beneficial?—Yes; I may just add that the solid residuum from the dissolving of bleaching salts is in no case that I am aware of thrown into the river; it is either buried or mixed with other matters for manure.

4935. And used, for economy's sake, in very small proportions?—We are obliged to use it so that it will do its work, but not in excess, on account of its cost.

4936. May I take it generally, then, that having gone through the various refuse matters mentioned in the Report, and the means suggested for their removal, that, as you have stated at the outset, you do not concur with the Commissioners in thinking that there is no serious difficulty in their removal?—I certainly do not.

4937. And that, in point of fact, their presence is not, in your judgment, where proper precautions are used, and the trade carried on judiciously, a source of pollution, or, if they are, they are soon absorbed and become not deleterious?—What I say is this, that the refuse matter emptied from paper mills, if taken in an undiluted state, may be said to injure the water, but that when it is diluted, as it always is in practice, it does not injure the water at a small distance, or a very few miles, at all events, below the mill.

4938. Now, as regards the mills, of course I do not ask you as a lawyer, but, you know, do you not, that these owners and occupiers of mills, to whom the water is essential for the manufacture of paper, have, as long as you can remember and much longer, been carrying on their trade in that way as an absolute right on their part?—There is no question whatever that the easement we possess of emptying our refuse water into the stream is one of the most valuable properties which attach to a paper mill.

4939. Do you concur in the opinion expressed by most of the witnesses here, that if any of those restrictions and obligations contained in this Bill are imposed upon the manufacturers of that district that it will be an annihilation of the trade?—Certainly; if the mills are prohibited from emptying their washing and boiling water into the streams in the manner that they have been accustomed to, I believe it must lead to the closing of them.

4940. In fact, it would be confiscating their property, would it not?—There is no doubt whatever that it amounts to that.

4941. I believe it is the universal feeling of those, like yourself, engaged in this trade to avoid any unnecessary fouling of the water?—Of course we are always anxious to do what we possibly can to avoid being in any way either injurious to the makers themselves or disagreeable to our neighbours; but, at the same time, we cannot be called upon to do that the doing of which would involve us in an enormous outlay, and put an end to the profit of our business.

4942. Is the mischief in your judgment very much exaggerated by those who are apprehensive what the consequences are resulting from the carrying on of this trade?—I think there is no doubt whatever on that point; as far as I have been able to see from the published analysis of the Thames water, there is no trace of any impurity in it discoverable from paper mills.

4943. I dare say you have looked through the clauses themselves; you would not like to subject yourself to such a set of clauses as are contained in this Bill?—Decidedly not.

4944. *Chairman.*] Do you require pure water for your manufacture?—For the manufacture of white paper we require pure water.

4945. If you were a manufacturer of white paper, you would have an interest in preventing persons polluting water above your mill?—Not in the slightest; in the case of a river like the Thames, which is subject to floods of water during three months of the year, when it is rendered very turbid it would be utterly unsuitable for the purpose of making white paper.

4946. Do you use water for your power?—Yes, our mills are, with one exception, all water mills.

4947. You use it for power as well as for washing?—We use the water of the river for power; we use well water for washing.

Mr. *Johnson.*] It has been suggested by some one in this room, that the paper makers above have made the water so foul, that those below could not use it for the purpose of manufacturing white paper.

Mr. *Phinn.*] It was suggested by one of the witnesses; he said that the sewage coming down so polluted the water that he was obliged to give up making white paper, and take to making brown paper.

Mr. *Johnson.*] I have nothing to do with the sewage, I thought it was the paper makers; if it is only sewage, I have nothing to do with that.

The *Witness.*] Apart from that, during the time of floods, when the river is in a turbid state, it makes it utterly unsuitable.

4948. Mr. *Johnson.*] Without any manufacturer being above, or any sewage being admitted into the river, could a manufacturer of white paper use the water from the river, when it is in a turbid state after floods, for the purpose of such a delicate manufacture?—Not without filtering.

4949. Those whom I represent here make white paper; do they use spring water from wells?—I believe that in most cases they use spring water from wells, but in some cases they have filtering ponds, and use filtered water.

4950. You are aware, for instance, that it is suggested in one of the clauses of the Bill, that one of the defences may be that it is not reasonably possible for the manufacturer to discontinue doing that act which is complained of; do you know how many different patents and inventions have been suggested for getting rid of these objectionable properties?—I am not able to say how many, but there is no doubt in my mind, that if that is to be the only plea which is admissible, we shall be constantly told you have not tried So-and-so's process, and that a man might be likely to make an outlay of 100 *l.* in trying one thing after another, and at last be actually worried out of the trade.

4951. In fact, if he were called on to make a very considerable outlay in making use of those experiments, the trade not being very profitable just now, it would debar him from carrying it on at all?—It would depend on the amount of capital the paper maker has, but during the last few years, a great many paper makers have actually lost money rather than made money.

4952. And if he were to be obliged to use those experiments, he had better give up the manufacture altogether than be subject to such a necessity?—Beyond all doubt,

4953. I do not know whether you are familiar with it, but I wish to call the attention of the Committee, through you, to the Salmon Fishery Act of 1861, the 5th section of which is as follows: "Every person who causes or knowingly permits to flow, or puts or knowingly permits to be put into any waters containing salmon, or into any tributaries thereof, any liquid or solid matter, to such an extent as to cause the waters to poison or kill fish, shall incur the following penalties; (that is to say,) (1). Upon the first conviction, a penalty not exceeding five pounds; (2) Upon the second conviction, a penalty not exceeding ten pounds, and a further penalty not exceeding two pounds for every day during which such offence is continued; (3) Upon the third or any subsequent conviction, a penalty not exceeding twenty pounds a day for every day during which such offence is continued, commencing from the date of the third conviction; but no person shall be subject to the foregoing penalities for any act done in the exercise of any right, to which he is by law entitled, if he prove to the satisfaction of the Court before whom he is tried that he has used the best practicable means within a reasonable cost to render harmless the liquid or solid matter so permitted to flow or to be put into waters; but nothing herein contained shall prevent any person from acquiring a legal right, in cases where he would have acquired it if this Act had not passed, or exempt any person from any punishment to which he would otherwise be subject, or legalise any act or default that would but for this Act be deemed to be a nuisance, or otherwise be contrary to law"?—I have seen that section.

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Cross-examined by Mr. *Phinn.*

4954. I think we may clear away what is useless matter; if I understand, you do not object to the truth of the statements contained in the Commissioners' Report?—To what statements do you refer?

4955. The statements with reference to the deleterious nature of the matter poured into the stream, or, in truth, to the processes which they have described?—I have stated that the accounts of the processes which they gave are approximately correct.

4956. I do not know what you mean by approximately correct, approximately may be a long way from the truth, or it may be a certain distance?—The processes employed in different mills vary, and therefore no single account will give an absolutely true account of all the processes employed in paper making, but their general view is correct.

4957. Let me ask you where your mills are?—I said they were in Hertfordshire.

4958. I want to know on what streams?—Our mills are mostly on the Gade; I have five mills in Hertfordshire, four are on the Gade and one on the Colne.

4959. Is the Colne the river near Mr. Hibbert's property above Uxbridge?—Yes.

4960. Was it from one of those mills that the refuse was poured into the water which killed all Mr. Hibbert's fish?—Mr. Hibbert lives at Munden, near Uxbridge; the only Mr. Hibbert I am acquainted with is Mr. Hibbert of Munden; I did hear that his fish had died.

4961. There was some allusion to the paper mills above him sending their refuse down?—There are no paper mills above him.

4962. Then that is not the Mr. Hibbert I mean; do you know another Mr. Hibbert also on the Colne above Uxbridge?—I do not; I have heard of a case where people working in a paper mill had stolen the bleaching salts and poisoned the fish, and those people were liable to be proceeded against for the wilful destruction of the fish, but the mills had nothing whatever to do with it.

4963. Do you mean to say that there are no paper mills above Mr. Hibbert of Munden?—No, none that I am acquainted with.

4964. If I understand you right, you claim right for the millowners to pour their refuse into the river on the ground of absolute necessity, is that so?—I claim it as a legal easement, which they have enjoyed for the last 20 years or more; it depends on various circumstances, but generally speaking for the last 20 years.

4965. You agree with me, that that cannot occur with regard to esparto grass?—It may under certain circumstances occur even with esparto grass; if I had a rag mill emptying a certain quantity of refuse matter into the stream, and I convert that from a rag mill into an esparto mill, and I do not pour more refuse into the stream than when I used it as a rag mill, I am within my legal rights, and cannot be interfered with.

4966. You mean deleterious?—When I say I do not pour in, I mean both as to quantity and as to quality.

4967. That is the whole point; so that when you have had 20 years' enjoyment of pouring this refuse into the water, and anybody sues you for doing that which is injurious, you must set up your 20 years, and you must show that you have enjoyed the same quantity and the same quality?—I believe that to be the case, but I am not a lawyer.

4968. So that, in point of fact, if it can be shown, even in my learned friend's view of the law, that you increase the quantity or quality substantially you could not justify your acts?—I believe in that case you are liable to an action, and there are remedies existing at law without any further enactment of Parliament.

4969. Do you know any public body which is armed with the power of protecting the individuals on the river?—I am not acquainted with any public body of the kind.

4970. On the river that you have your mills upon, is there much population on the banks below you?—In one instance certainly there is.

4971. Where is that?—At Rickmansworth.

4972. I believe

4972. I believe there has been litigation?—There has been no litigation with us.

4973. But with other paper makers?—There has with reference to other paper makers.

4974. And a great deal of litigation, has there not?—I am not prepared to say, not being an interested party.

4975. But there has been litigation?—There has been litigation. I may just mention that in our mill at the Gade we do not boil our rags; we do the whole of our boiling down at Rickmansworth; we have a fishery immediately below us, and we have never had an action brought against us, though we have been often accused of killing fish, which may have occurred occasionally; we have never had an action brought against us; is it not sometimes the case that the bleaching liquid, or the produce of the bleaching liquid, is stored in reservoirs?—In all cases the bleaching process goes on in large vats, which are filled with boiling liquid.

4976. And occasionally they burst?—I believe so, the same as a train runs off the line.

4977. And kill the fish?—Yes.

4978. And pollute the water?—And pollute the water.

4979. Colonel *Napier Sturt.*] It is the refuse from the white paper mills, is it not, that injures the fish, and not the refuse from the brown paper mills?—I maintain, with a mill properly conducted, there is no injury caused to the fish; but, of course, if the bleaching powder is emptied into the streams, it will no doubt kill the fish.

4980. That is from white paper?—Yes.

4981. And not the refuse from brown paper?—I do not think the refuse from brown paper injures the fish.

4982. Mr. *Phinn.*] Let us go through what you said first, in order; the Commissioners say that the product from the dusting process "is valuable as manure, and there is no excuse for throwing it into the river;" that you agree with?—It is not done.

4983. But supposing it is done?—Then it is wrong.

4984. Supposing it is done, do you not think it is quite fair that that should be prevented?—I have not the least objection to a clause which will prevent us from throwing dry dust into the stream.

4985. Then you agree with them in their first recommendation, that that should be prevented?—I do.

4986. The second is the lime refuse, from the treatment of the soda to make it caustic; is there no process by which it can be desiccated, and the water separated from it?—If you have space to do it, of course you can do it.

4987. What you want is space to put up a large vat on?—And it must be in such a position that you can drain into it.

4988. That could be desiccated without any great expense, I suppose?—It could be reduced into a pasty condition, so that it can be carted away if you have space to do it in.

4989. I believe you differ mostly with regard to the alkaline waste liquor?—Yes.

4990. You say that that is not prejudicial to the water at some distance below, but that it is when there is a very large volume of water mixed with it?—Yes.

4991. But supposing a paper mill to be just above the place where people are taking water for drinking, that is, within a mile or two, do you mean to say that that water would be as fit to drink?—Certainly, if the stream is of such a size as to afford motive power for a mill, then the water drained into it would not affect the stream two miles lower down.

4992. Would it one mile down?—I can only say this, that I have a paper mill above me where I live, and I never see any trace of what they empty into the water.

4993. Do you drink the water?—No; I drink well water.

4994. Supposing you are reduced to drinking that water, do you mean to say you would like to drink that water after the alkaline waste liquor has been poured in?—I see other people drink it; you are under a mistake in supposing that alkaline water is deleterious; you will find, taking the chalk wells under London, that is, the Artesian wells, that there is a greater proportion of car-

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bonate of soda to the gallon than you would find in any stream below a paper mill, that is, taking a quarter of a mile from it.

4995. Then it comes to this, that any sensible man would agree with you that that is neither offensive nor injurious?—What I said was this, that it is not the alkaline water that is injurious, but it is the vegetable extract that is injurious.

4996. The alkaline water is neither offensive nor injurious?—Certainly not.

4997. As we only proposed to prohibit what is offensive or injurious, therefore you would not be touched with reference to that?—What we empty from the boiler is an alkaline solution of vegetable matter, and, to a certain extent, other organic matter; although alkali itself is perfectly innocuous, yet, if you take the liquor at the spot where it is emptied into the stream, you may say that it does much injury to the water, or tends to injure it.

4998. I was trying to separate the two things; as regards alkali proper, there is no injury?—No.

4999. As regards the vegetable matter that you hold in solution by means of the alkali, you say there is no injury?—There is injury to the stream close to the mill, and that more as a matter of amenity than anything else.

5000. Not injurious to drink?—I should think not; I have never tasted it myself, but I have been told by some persons that they have not the least objection to drinking the liquor as it comes away from the boiling of esparto even.

5001. Captain *Vivian.*] Does it cloud the water at all?—It discolours the water very considerably, and makes it frothy.

5002. Mr. *Phinn.*] As alkali is not offensive or injurious, and as vegetable matter is not offensive or injurious in the sense of injuring health, or anything but amenity, no tribunal would find that to be offensive or injurious in the sense in which those words are used in this Bill?—I say that if that were so we should be specially exempted from the operations of this Bill, but I think there will be no difficulty in getting evidence which will satisfy any single justice or two justices, that what we put into the stream tends to injure the water in the immediate neighbourhood of the mill where it is emptied.

5003. Put that aside, and suppose that you, the paper makers, were to be given the right of demanding a jury by way of appeal from the justices, should you be content?—What we object to is ——

5004. I must ask you to be kind enough to answer me the question, and then you can give any explanation you like afterwards?—We should not be content if our legal rights, which constitute an important part of our property, are taken away without any compensation.

5005. That is not an answer to the question?—Your question is, whether we should be content with having the matter referred to a jury?

5006. Yes?—I would rather not have it referred to a jury.

5007. You would rather not have it referred to a jury?—When I say I would rather not have it referred to a jury, I mean that we ought to be allowed to continue our business as at present, but if we are to have it brought before some tribunal to decide whether we are polluting the water of the Thames or not, I would rather refer that question to a jury than to any single justice.

5008. Do you think this provision would be fair, that if the justice found it to be offensive or injurious, that the paper-makers might demand to have the question submitted to a jury?—I think that would be a concession.

5009. And a fair one, would it not?—Well, possibly a fair one; it is a legal question, on which perhaps I am not competent to form a very good opinion.

5010. I wish to ask you this, have you looked at this matter as a whole, have you considered the benefits that the paper makers will incidentally enjoy from this measure?—I have not seen any benefits they are likely to enjoy from it.

5011. Do you concur with Mr. Lloyd that the reduction in the price of coals would be a very great benefit to all persons on the river?—No doubt it would to the paper makers on the Thames, if they could get their coals cheaper, it would be an advantage.

5012. Would the establishment of a system of through rates, be a beneficial matter to the paper makers, in respect of the carriage of coals?—I presume it would to the district generally.

5013. Have you looked at what Mr. Lloyd has said in answer to Question 3386, and the following questions in page 117: "If the river was in a reasonable state of repair to enable you to make voyages with comparative certainty, would you

you prefer using the river?—Most certainly, because we could load both ways, with material one way and with manufactured goods the other way. What do you pay per ton for materials brought by railway?—For raw material 7 *s.* 6 *d.* per ton, that is, for waste paper or for rags, if we use rags from London. Is that the charge for delivering on your premises?—No, it is not; that is for carriage from station to station; we have carting besides from London to Paddington, and from the Theale station to the mill. What does that cost you extra?—I think it is 3 *s.* in London, or 3 *s.* 6 *d.*; we do it with our own carts at this end. What amount would you put the last at?—I have never calculated that. What is the distance in miles?—Something under half a mile. Would 6 *d.* a ton do it?—More than that; it would be 9 *d.* That would make the expenses about 11 *s.* 6 *d.* altogether?—Yes. What reduction upon that would enable you to send your traffic by the river?—A few years ago I carefully went into the details of all the dues down the river, and found that it would be a saving to the mill of something like 250 *l.* a year, supposing the river traffic was conducted with certainty." That is a diminution of 250 *l.* a year in the expenses of one mill; that would affect all those 29 mills on the river?—As it affects one mill it would affect all.

5014. If the navigation were put into repair, the facilities given to one mill would be given to the others?—This Bill extends to the tributaries of the River Thames three miles away from the stream; most of the mills are on the tributaries, and the river is not navigable up to them.

5015. When a particular tributary is not navigable they would not go up, but where it is, they would all be in the same boat?—Yes.

5016. I do not know whether you have referred to Mr. Towle's evidence who spoke to the same effect?—I have seen Mr. Towle's evidence.

5017. Mr. Towle states that it is very much impeded with the sewage, that where he used to make white paper he can only make brown paper; do you think, looking at this measure as a whole, that it will be a great boon to the paper makers to scavenge the river?—I think Mr. Towle in that evidence showed, I do not know how to express it exactly, but I cannot reconcile his evidence with the actual state of the case; it would be impossible for Mr. Towle in a flooded river to employ water for making white paper without filtering it, and if he filtered it he would not be subject to those blotches of which he complains.

5018. Would not the body which regulates the floods of the river be of great importance to the paper makers?—I should think very probably it might on the Thames itself, but that does not apply to the tributaries.

5019. Some are on the river?—Yes.

5020. The tributaries are not subject to the same floods as the main river?—I believe not.

Re-examined by Mr. *Johnson.*

5021. My friend asked you, as regards the destruction of fish, whether it was not a little bit of spite upon the part of some of the workmen engaged in the paper-mills; if the fish were maliciously destroyed there is already a legal remedy to prevent any such act on their part, is there not?—No doubt.

5022. He asks you also, if the bleaching powder was not in large vats, and whether they did not sometimes burst; I suppose no Act of Parliament will prevent that; no one wilfully bursts a vat, I suppose?—Certainly not.

5023. And you could not guard, by any precautionary means which are not already adopted, against an accident of that nature?—Certainly not.

5024. I do not know whether it is a frequent occurrence, or a rare one?—This is the only instance I have ever heard of.

5025. I suppose if a vat did burst with bleaching liquid in it that the immediate effects must be injurious and prejudicial?—No doubt it would kill the fish, not precisely the fish in that spot; what is ordinarily put into the river is not injurious to the fish.

5026. Do you frequently see in the immediate vicinity of where this paper manufacture is carried on fish in a healthy and lively state?—Yes.

5027. That is so, is it not?—Yes.

5028. Where the manufacture is carried on, and the bleaching liquid is used, daily, or perhaps hourly, is it cast into the river once in 24 hours?—It depends entirely on the character of the manufacture.

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5029. Taking an ordinary average mill, such as you have given us, as making so much paper per week, how often does the process of bleaching in the course of that manufacture take place?—It is a sort of continuous process.

5030. But going on at intervals of what shall we say?—Three or four hours.

5031. Then it is very nearly what I said, it is not only a daily, but, very frequently an hourly process?—Yes.

5032. Now, my friend asked you with regard to the benefits that you would receive, whether you would be willing to refer this matter to a jury; you think a jury would be a preferable mode of having it determined than by a single justice?—I think if there was an appeal from a justice that that would be a fair tribunal.

5033. But if you have established rights you do not want them interfered with by a body of Conservators, and the unaided opinion of a single justice or a body of justices sitting in petty sessions, you do not want them to have the power of placing you in that position that you would be obliged to apply to a jury as a remedy?—Exactly; I do not wish to have legal rights which, in some cases, have cost a large sum of money, taken away in the way proposed.

5034. And become a question of ultimate appeal to a jury?—No.

5035. Now, my friend asked you whether correlative benefit would result from the other works proposed to be carried out under the operation of this Bill; that is to say, getting a great body of water and by that means obtaining coal cheaply and improving the navigation; is it the fact that the majority, I do not know whether the whole of them, are situated upon tributaries of the Thames which are not navigable at all?—So I believe.

5036. My friend says they are in the same boat, but they could not be in any boat at all unless that boat could float up to their works?—Exactly.

5037. So he said with regard to the scavengering of the river, that depends on the river; the waters of the Thames after the turbidity produced by heavy floods would not be available for the manufacture of paper, and especially the delicate sort of paper, unless it underwent first the process of filtration?—Certainly not.

5038. So that they would derive no immediate benefit from anything that would be done which could make that water available for purposes for which at present it is not available?—Certainly not.

5039. So that you would have the burdens cast upon you without any correlative advantages as to covenants upon the part of the paper manufacturers?—Yes.

Mr. *Henry Wheeler*, called in; and Examined by Mr. *Lumley Smith*.

Mr. *H. Wheeler.*

5040. You are, I believe, a Paper Manufacturer, at Eagle Mill, Wycombe?—Yes.

5041. About how much paper do you make every week?—At that mill and my other mill, about seven tons.

5042. What proportion do you use of esparto and of rags?—I believe about half a ton of esparto, and 25 cwt. of rags, on the average.

5043. With respect to the refuse that is produced from the rags, we have heard that that is good for manure; do you agree with that?—Yes; I consider so.

5044. Do you consider that it ought not to be thrown into the stream?—I think it ought not to be thrown into the stream.

5045. As a matter of practice, is it ever thrown into the stream?—I have never known it to be so.

5046. Do you find that you have no considerable difficulty in getting farmers to take that kind of refuse for their farms?—No; at any rate they are always ready to take it as a gift, and sometimes I am able to sell it.

5047. Now with respect to the refuse that is produced by treating the soda with lime, in order to render it caustic, is that good for manure?—I should imagine not; but I cannot speak chemically.

5048. Have you found any difficulty in getting anybody to take it?—Yes, as far as solid lime is concerned, for that and for other purposes, I have never been able to part with it; I have often tried to part with it, but have not been able to get anyone to take it.

5049. When you have not been able to get any one to take it, you have been obliged to throw it into the river?—Yes.

5050. Do

5050. Do you consider that if you are precluded from throwing it into the river you ought to have the power to take land to put it on?—I think possibly that it might injure the land; but I am not a farmer.

5051. You must get rid of it somehow?—Yes, I think the quantity used is so small that it could not affect the river.

5052. Now with respect to the great bulk of the boiling and washing alkali liquor, that would as a matter of practice be done away with?—It is allowed to go into the stream.

5053. Do you know any possible means of preventing its going into the stream?—Not any practical means.

5054. I believe you have investigated the expense that there would be in attempting to evaporate it?—As far as my own case is concerned, the quantity of esparto used is very small, and with regard to boiling the rags I first of all used the liquor for boiling the esparto, and then for boiling the rags, but I use such a small portion of alkali that there would be nothing left to evaporate.

5055. You consider that the water which goes into the stream is not sufficiently impregnated with alkali to injure the water?—I consider not.

5056. I presume it is coloured, and discolours the river?—It is coloured.

5057. You do not consider that it is injurious to the river?—I should consider not.

5058. Now, with respect to the paper that you make from rags, you state that there is very little alkali used, and it would not pay to evaporate it?—Not at all.

5059. If esparto is used, there is a considerable quantity of alkali?—But still not sufficient to pay for evaporating it; if straw was used, I think it would pay for evaporating, but only just pay in our neighbourhood, for only a small portion of esparto is used; I believe it would not be worth while to go to any expense.

5060. Do you know that in the mills on the River Thames the major part of the paper is made from rags, and not from esparto?—I cannot speak myself as to the River Thames; but with reference only to the tributaries of the River Thames, I know it is principally either from all rags or from a mixture of esparto and rags.

5061. Some questions have been asked about the purity of the water, and whether it is not necessary to have pure water for the white paper; do you use water from the stream or water from wells?—I use water from wells.

5062. Can you give me any idea how much water you use for the manufacture of paper; I believe you have made some calculation?—About one and a half millions of gallons of water per day.

5063. Do I understand you to say that you pump into the stream about one and a half millions of gallons of water per day?—Yes.

5064. That is water that has been pumped up from a very considerable depth?—From Artesian wells, at a depth of 100 feet; it has not been pumped up 100 feet, but it has risen in Artesian wells 100 feet, and is then pumped up.

5065. By that amount, the navigation of the river is benefited?—Yes, a small portion of alkali only is used, about one and a half cwt.

5066. You only use one and a half cwt. of alkali in this 1,500,000 gallons of water?—Yes.

5067. It is stated in the Commissioners' Report, that this is a trade in which small matters are of very great importance; do you consider that there are any means by which you can separate the alkali and all these products, so as to avoid throwing them into the river, and yet be able to carry on your business?—I consider not.

Mr. *Reilly* stated, that he had nothing to ask in cross-examination.

5068. Colonel *Napier Sturt.*] Did you ever hear of any fish being killed in that stream by the refuse from the paper mills?—Occasionally, from accidents in letting down.

5069. Are there any fish in that stream now?—No, the stream generally is exposed to the road, and therefore if there are any fish they are caught lower down the stream.

5070. Some way from the paper mills?—Some way from any mills.

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5071. Do you make white paper or brown paper?—White paper.

5072. Sir *M. H. Beach.*] What colour would chloride of lime give to the water, supposing it were discharged into it?—White.

5073. It would be a creamy colour?—Yes, but chloride of lime is too expensive to discharge into the river.

Mr. *James Castle,* called in; and further Examined by Mr. *Lumley Smith.*

Mr. *James Castle.*

5074. I WISH to ask where the first paper mill is on the Thames, above Staines?—The first mill actually on the Thames is at Taplow, just above Maidenhead Bridge.

5075. That, I see by the map, is 31 miles above where the waterworks draw their supply?—I do not know the exact point where the waterworks draw their supply; that is below my district; I should imagine it would be somewhere about 30 miles.

5076. I believe that the nearest mill to Staines is a mill at Wraysbury, which is opposite Egham?—Yes, it is on one of the tributaries.

5077. That, I also see by the map, is 19 miles from Teddington, and about 17 miles from where the waterworks draw their supply?—Yes, that would be 18 or 19 miles from Teddington.

5078. That mill at Wraysbury is the nearest paper mill to the water works?—Yes, it is the nearest that I am aware of, but my jurisdiction does not go below Staines.

5079. How far up the tributary is Wraysbury Mill?—Somewhere about a quarter of a mile, I should think.

5080. Mr. *Neate.*] What stream is that on?—On the Colne.

5081. Colonel *Napier Sturt.*] Can you tell how the locks are let on the Upper Navigation?—At the present time there are not any of them let.

5082. What is the system?—They have been advertised to be let in a similar manner to that in which turnpikes are let.

5083. They have been let by auction?—Yes.

5084. Has that invariably been the case?—Yes, it has recently, when the locks have been let.

5085. Since when; can you tell me?—For the last two years there have not been any locks let, in consequence of the position in which the Conservators have found themselves; but, previously to that, Iffley Lock and Sandford Lock, and the whole of the locks above Oxford, were let; and since I have had to do with them an arrangement has been made that a particular notice shall be given in the newspapers; persons have attended in the same way as they do at the letting of the turnpikes, and the highest bidder has become the tenant.

5086. Is the same system adopted as on the Lower Navigation; do the men receive the money from the tolls and hand them over to you, and receive a certain fixed amount in wages?—Yes.

5087. I do not understand why they have not been let?—The Commissioners were not in a position to bind themselves for any length of time; they found persons who were willing to take the locks, but who were not willing to take them for a short period.

Professor *Edward Frankland,* called in; and Examined by Mr. *Johnson.*

Professor *E. Frankland.*

5088. YOU are Professor of Chemistry at the Royal School of Mines and at the Royal Institution?—Yes.

5089. You are also a Fellow of the Royal Society?—I am.

5090. You have had great experience in testing the purity of river water?—I have been frequently called upon to make those investigations.

5091. I believe you report monthly, do you not, officially for the Registrar General on the purity of the water taken from the Thames for the supply of London?—I do.

5092. Those impurities are of two kinds, are they not, organic and mineral?—They are.

5093. And, in a sanitary point of view, the organic are those which alone are of any importance?—That is so.

5094. Can you tell me what is the quantity of organic matter in the Thames, which varies, I daresay, from what shall I say is the maximum to the minimum per

per gallon?—If you will allow me to refer to my annual report on the subject I shall be able to tell you exactly.

5095. Do so, by all means?—From about two grains per gallon down to three-quarters of a grain per gallon.

5096. Is that variation attributable and dependent upon the particular state of the river?—Exactly so.

5097. Have you ever detected in the water drawn above Teddington Lock for the water companies any organic impurity traceable to the manufacture of paper?—I have not.

5098. That is to say, you have tested by analysis, and from your knowledge and chemical experience, you pronounce it to be the fact that you have been unable to trace any such organic impurities to such a cause?—I do.

5099. Can you give me what is the amount of water that goes over Teddington Lock; take the minimum?—The minimum quantity flowing on the bed of the river above Teddington Lock, and before the water companies withdraw their supply, is about 300,000,000 gallons daily; that is the minimum.

5100. I want you to deal with the minimum; my friend, Mr. Toulmin Smith, says it is more, but you pronounce that to be the minimum quantity which by any process of testing you have ascertained to be the amount?—I have not ascertained the flow of the river; I go simply by the evidence of civil engineers, who tell us that it is so.

5101. That is the minimum quantity which you gave, and that is the lowest in point of fact?—In seasons of great drought it falls down to that point occasionally, but very rarely.

5102. That being the minimum, you have based your calculations upon that?—Yes.

5103. Can you tell me what would be the total amount of organic impurity thrown into the Thames and its tributaries from the manufacture of esparto paper; when applied to that minimum what would be the proportion of organic matter per gallon in grains?—That would be on the assumption, which I presume is correct, that 49 tons of esparto are used per week in the basin of the Thames; the amount of organic impurity, supposing it all thrown into the river, and all to reach Teddington Lock, would amount to 0·14 parts in a gallon of water.

5104. That is to say, when the river is at its minimum, supposing the whole of the products from that manufacture find their way down to that point, that is to say, to the point where the water companies draw their supply, that would be the utmost, that is, the greatest amount of organic impurity in the river at that point from that manufacture?—It would.

5105. Assuming the minimum quantity, and the greatest amount of organic impurity?—Yes.

5106. Organic impurity, that is to say, organic matter present in rivers is of two kinds, is it not, that is, animal and vegetable?—It is.

5107. The animal organic matter is that which is generally believed to be noxious?—Yes; that is the kind to which the noxious qualities of water charged with organic matter are attributed.

5108. May I take the converse of that, that vegetable organic matter is, in your judgment, considered at least to be innocuous?—It is.

5109. I find this in Mr. Leach's examination at Question 1793, "What is the quantity of water that goes over Teddington Lock?—The very shortest quantity that I have measured has been 380,000,000 gallons in the 24 hours." That is after the water companies have taken their supply, therefore it would reduce very much the proportion of the minimum quantity of organic matter in water flowing over Teddington Lock?—It would reduce it to one-tenth of a gallon.

5110. I am asking you the question with reference to the organic matter from the paper manufactories; you have given me the quantity and the conditions under which that organic matter could find its way down to Teddington Lock, minimised still further by the reference which has just been given; you have told me that organic matter is innocuous; is the organic matter communicated to the water by the manufacture of esparto paper; is that vegetable or animal?—It is purely vegetable.

5111. Therefore, in your judgment, although it may discolour the water it is in no degree noxious in itself?—No.

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5112. Now I have taken the supposition that the whole of this finds its way down, and in any character that it assumes at first, or which is inherent to it before it becomes diluted, or subject to the action of the water and the oxygen of the water, is it the fact that every stream possesses a great self-purifying power as regards organic matter in its passage?—Undoubtedly every stream can purify itself from its organic matter if it has a sufficient distance to flow.

5113. The distance we have just had proved; I think the nearest distance is 20 miles; do you think where these organic matters have been passing with a volume of water down the stream, that it could at that distance possess any deleterious properties, in your judgment?—That is a very difficult question.

Mr. *Neate.*] What is the nearest distance that you are talking of?

Mr. *Johnson.*] The nearest mill, as I understand, upon the Thames or any of its tributaries, to the point of its supply; is the minimum distance of 20 miles.

Mr. *Neate.*] I thought one was 19 miles, and the other 17 miles.

Mr. *Johnson.*] Nineteen from Teddington Lock is the first.

Mr. *Neate.*] It is not the distance to Teddington Lock, but the distance to the place of the water supply.

Mr. *Johnson.*] That would be 17 miles; it is 19 miles from Teddington Lock, and therefore it would be 17 miles from the point where they draw their supply, which is some two miles above Teddington Lock; the nearest is Wraysbury Mill.

The *Witness.*] I say that that is a difficult question to answer, because it depends on the temperature of the volume of water.

5114. Mr. *Johnson.*] Now, I will take the temperature of the Thames and the volume of water which has been given as the minimum flow over Teddington Lock?—Yes, but what temperature of the Thames?

5115. I hardly know, you can answer that question better than I can; no doubt the temperature will vary in the summer, for instance; and it will vary, of course, very much from the winter?—Yes, it varies very much in the summer; I should say that organic matter could not reach to anything like that distance.

5116. Not in the summer?—Not in the summer.

5117. I understood you to say that there are no deleterious properties at all traceable from esparto; it is put forward here as if there were most deleterious properties; you say there is nothing but what is vegetable, and those are innocuous in esparto?—Yes, the organic matter from esparto is purely of a vegetable origin.

5118. And from any other process, that is to say, from the bleaches or any other material used in this manufacture, you say you believe, speaking professionally, that they could not produce any effect even in summer?—I think not, but as to tracing the organic matter, I could not speak with any confidence, because I could not, of course, trace that organic matter.

5119. Can you tell me whether the companies could even be relieved from the necessity of filtering; could any process of purifying, in your judgment, dispense with the necessity of the water companies filtering; I do not mean supposing they were not required by law to do so; but could anything relieve them from the necessity, even if they were not under any legal obligation, from the process of filtering?—There is no process known at present by which they could be relieved from it; of course we do not know what may be invented.

Cross-examined by Mr. *Reilly.*

5120. You have given great attention to the subject of the analysis of water?—I have.

5121. I think you report to the Registrar General?—I do, monthly.

5122. That is in the interest of the public health of London?—It is.

5123. A very small increase in the impurity of the water of London is considered to be a very serious matter?—Yes, of deleterious matter.

5124. Of

5124. Of organic matter?—Of animal organic matter.

5125. And you would consider, no doubt, that even the proportion of 0·14 grains in a gallon is a very serious thing?—If it were animal organic matter, any impurity of that kind whatever, although a very small quantity, is of very great detriment to the stream.

5126. When a paper-mill throws in a large number of tons of refuse in the year, do you consider that that is an injurious act to the water of the river?—To what particular refuse do you allude.

5127. This alkali refuse, which is produced from the esparto?—I think it would be decidedly better if they were not thrown into the river.

Cross-examined by Mr. *Holland.*

5128. If you have got before you the Report of the Commissioners, you will find in Appendix No. 14 an extract from the Report from the Registrar General as to the average daily supply of water; there was a question raised in Mr. Leach's evidence as to whether that Report could be true?—You refer to the quantity of water supplied.

5129. I will refer you to Question 1613 in Mr. Leach's evidence; Sir G. Bowyer asked Mr. Leach these questions: "Are you aware of Appendix 14 to the First Report of the Commissioners upon the Pollution of Rivers; it contains in the fifth column the proportions of organic matter and other volatile matter in the water furnished by the different companies?—Yes. I see that the water of the Chelsea Company contains the largest amount of organic matter?—Yes. The quantity is stated to be 2·59?—Yes; that makes me think that the water companies are hardly fairly treated in these analyses; the Chelsea Company is at the top of that, and the Lambeth is at the bottom, and they both take the water as nearly as possible from the same point in the river. How do you account for these figures; I will read them to you, 'Chelsea 2·59, West Middlesex ·00, Southwark and Vauxhall 2·40, Grand Junction 1·60, Lambeth 1·65;' so that there would be more impurity in the Chelsea water taken from the Thames than in that of any other company?—It would be so according to this analysis, but that is not to be relied on; it is impossible there can be that difference between the Chelsea and the Lambeth, because their sources are almost identical." Then another question he is asked by Captain Vivian, "The process of the two companies may not be the same?" to which he replies, "That may be so." I think it is fair to ask you, if you can, to account for the difference in the samples?—These samples are, of course, taken in London from points prescribed by the respective companies themselves; I think the difference is to be accounted for in this way: the companies filter their water to different extents; some of them deliver it frequently turbid, and others always clear, and the company which filters the water more effectively would, in all probability, remove a certain proportion of the organic matter from the water.

5130. I understand you to take the water after it has been filtered, and you account for the difference in that way?—Of course that difference struck me in the analysis, and I was at a loss to account for it myself; but it certainly is the fact that that difference has occurred.

5131. Mr. *Reilly.*] Do you say that it arises from the different systems of filtration?—I presume so.

5132. And the point at which the water is taken?—I believe they are all taken at that point.

Examined by the *Committee.*

5133. Sir *M. H. Beach.*] I understood you to say that there is no harm in vegetable organic matter being put into the river?—There is no harm in a certain proportion; if vegetable matter is put into the river in such a proportion as that it will dissolve in the water, then the water is liable in hot weather to become putrid, and then the vegetable matter, as well as animal matter, becomes noxious matter in the water, but under normal circumstances it is considered to be innocuous.

5134. The residue from bleaching powder employed by the paper makers would be noxious in any case, would it not?—I think not if it has exhausted its

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bleaching properties to such an extent as ought to be done in every well regulated paper manufactory, then it would be no longer a noxious material.

5135. Is it not the case that it is only partially exhausted of those properties?—I think it is; I have known instances in which it has been turned into the river in a partially noxious state.

5136. It is noxious not only to fish but for drinking purposes?—I should say not for drinking purposes, but to fish.

5137. I understood you to say that in summer, whatever organic matter might be put into the River Thames 17 miles above the point of supply to the water companies, would not have any material effect in that district?—I will not say that, but this proportion of organic matter will not have any effect; if the proportion were 10 or 100 times as large, of course it would be very different; purifying can get rid of the organic matter to a certain extent, but if you deal with the organic matter beyond this extent, then the stream becomes noxious and enters into putrefaction in warm weather, and then the water is no longer fit for domestic or other purposes.

5138. But taking the water at its winter temperature, and the proportion of organic matter in its present proportions, what would be the case then?—I think that in winter it would very little diminish; the purifying power goes on in winter to a very slight extent only.

5139. Then it would be injurious in winter?—No, I do not think it would be injurious, because the organic matter in itself is not injurious, unless it enters into a state of putrefaction; it cannot enter into putrefaction unless the oxygen dissolved in the water is first removed.

5140. But the process of putrefaction would not go on the same in winter as it does in summer?—No, it would not.

5141. Mr. *Neate.*] Do I understand you to say that water would be discoloured from the refuse of the paper mills without being in any degree noxious?—I think so.

5142. Do you mean to say that it would be as wholesome as pure spring water?—It would certainly not be pleasant to drink if it was coloured, and it would probably also be tainted by some impurities.

5143. What I want to know is, whether you would recommend a man to drink a large tumbler of it before going to bed, and a large tumbler of it when he gets up in the morning?—I may mention that the water which is generally accepted as the type of purity, namely, the water of Loch Katrine, is usually of a yellow tint, through the presence of organic matter, and this water frequently contains more organic matter per gallon than the water which flows over Teddington Lock.

5144. Sir *G. Bowyer.*] Is the yellow colour always attributable to vegetable matter?—Almost invariably so.

5145. Are you acquainted with the classic water of the Tiber, which is yellow?—No, I am not.

5146. What is it which gives this yellow colour to the water of Loch Katrine?—A peaty matter gives that colour to the water; it flows over peaty matter, which is vegetable organic matter, and it is always considered to be innocuous.

5147. It is very old organic matter, is it not?—Very old.

5148. Mr. *Johnson.*] Does it soon colour from the discolouration?—The discolouration from the peaty matter disappears after being stored in a reservoir for some days.

5149. There is a tendency to discolouration, but does that disappear as the water falls down?—That I cannot really say from experience, I have not ascertained that point.

5150. Mr. *Neate.*] Is there not something of a very antisceptic character in peat?—It is decaying vegetable organic matter, similar to most other decaying vegetable matter, similar to leaves of trees which have fallen, although they are not very old.

5151. But is there not something antisceptic?—I think not, in that portion of peat which dissolves in the water; the porous part of it is left behind; some of it is in a charred form, and you will then have a very highly antisceptic agent.

5152. Captain *Vivian.*] Have you visited many of the upper mills on the Thames?—Very few on the Thames; in fact, I may say none on the Thames; but on other rivers I have visited a considerable number.

5153. Have

5153. Have you visited those mills at Rickmansworth?—Those mills I have visited.

5154. You know the condition of the refuse which is thrown from those mills into the river?—I do; I have seen the liquor actually thrown into the stream.

5155. Is that in such a condition as to do damage to the fish?—I think not; I think the damage that is said to be done to the fish in that stream, has arisen from this bleach water, and in all probability not from the esparto.

5156. That did not affect the drinking, I think you said before?—No.

5157. Sir *M. H. Beach.*] Would it be possible to discover that these fish had been poisoned by this bleaching liquor by chemical examination after death?—I am afraid that would be quite impossible.

5158. Sir *G. Bowyer.*] Can you give a general opinion that the refuse of a paper mill poured into the river is not injurious to the water of that river?—That I would not say; if you take a single mill upon a large stream, I would say that it would not be injurious to the water, but if you take a succession of mills upon a small stream then I certainly should; I know from observation and experience that it is very injurious to the water.

5159. Mr. *Peel.*] In the water supplied by the water companies, you say, you never found any impurity which can be traced to the operation of these paper mills?—I did.

5160. Have you ever found any trace of human sewage in the water supplied by the water companies?—No, because we have no absolute test for that quality of water; I speak with considerable confidence about organic matter from the esparto, because it is of a very peculiar kind; it possesses a peculiar aromatic smell, which we always notice in evaporating these waters from the Thames.

5161. I thought you might have some tests by which you could distinguish it?—Unfortunately we have not; it would be very desirable that we should have some.

5162. Sir *G. Bowyer.*] Then I understand your evidence to be this, that this refuse from the paper mills is injurious to the river, but that if the volume of water is such as to dilute the injurious matter, then it is either not injurious at all or comparatively innocuous?—Where the volume of the stream is sufficient to give this self-purifying power to it, I consider it to be innocuous, but when the volume of water is not sufficient to do that, then it is noxious.

5163. Then the system in itself is injurious?—I should say not; for instance, we have the same thing in the atmosphere; we have carbonic acid in the atmosphere of this room, which is quite innocuous; we are all breathing in a certain proportion, but if we increase the proportion it becomes noxious, as in the case of the Black Hole of Calcutta.

5164. Mr. *Acland.*] When you speak of purifying means, you mean only diluting?—I mean, in addition to the dilution, that there is a process of oxydisation or burning of the organic matter going on in every stream of the water; the organic matter of the stream is oxydised at the expense of the air that is always naturally dissolved in the water, but if the organic matter is present in a larger proportion than the oxygen can cope with, then the purifying matter does not go on, and the river becomes putrid in warm weather, and it is at that point that the damage arises.

5165. Captain *Vivian.*] It entirely depends on the volume of water?—It does.

5166. Mr. *Neate.*] When the oxygen of the water has been taken up and oxydised from its noxious materials, does not the water become less wholesome in consequence of the loss of that oxygen?—I should say, as a beverage to be drank, that it certainly was not in so good a condition, but as regards fish life it is absolutely poisonous when the oxygen is removed.

5167. The fish live on the oxygen in the water?—Precisely.

5168. The water may lose the oxygen, if the oxygen is absorbed by the consumption of this organic matter?—I think it would be better if it were more ærated, with more oxygen in it.

5169. But it loses some of its wholesome quality?—Yes.

5170. Mr. *Acland.*] I wish to refer you to this evidence, given by Sir Benjamin Brodie, at Question 1493. "It has been said that the oxydising power, acting on sewage running in mixture with water over a distance of any length is sufficient to remove its noxious quality; do you think that that is the case?—I should say

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that it was simply impossible." Do you disagree with that opinion?—Yes, I disagree with that.

5171. Will you give the Committee your reasons, which we, not being professional chemists, can understand?—We find that water which has got into this putrid condition, or which has been mixed with sewage, if it is allowed to run a certain number of miles, depending upon the volume of water with which the sewage is mixed, and the temperature at the time, if it is allowed to run a sufficient number of miles, this organic matter almost entirely disperses, and is burnt up, in fact, with the water; so that although it may be a great question as to how far the mixture will have to run, I do not agree with this answer, that in no distance would it be possible that sewage matter could be removed in this way.

5172. You are quite satisfied that no tests are sufficiently delicate to determine that question?—No; the determination of organic and other volatile matter in water is now made with very great care.

5173. Have you had any opportunity of judging of the effect of putrid water, or mere sewage water even if not putrid, when it is passed over grass in the way of irrigation, or in any other form applied by way of irrigation to agriculture, as to how far the water is purified by that process?—Yes; I have seen this process in operation on two or three occasions, and I have always felt that the purity of the water is very greatly increased by such passage over grass land.

5174. Are you able to say that the unwholesome quality of the water, which is very much increased by sewage, is removed by passing over a reasonable number of acres of land?—It is, to a great extent; and if passed over a sufficient quantity of land it would, doubtless, be removed altogether; but probably, practically, it could not be passed over sufficient land to remove it altogether, but it would, to a very great extent, get rid of it.

5175. Are you able to say nitrogenous matter is so changed in its character as to take a wholesome form?—Yes, that is the final result of the action of meadow land on the water, that the nitrogenous matter is converted into innocuous inorganic matter; in fact, it is no longer organic; it has become completely consumed, or burnt, or oxydised, and has been converted into inorganic matter.

5176. Can you state in what length of distance that would take place?—No, I cannot; I am afraid there are not data sufficient to determine that.

Re-examined by Mr. *Johnson.*

5177. When you talk of oxydisation you have been speaking merely of sewage matter, not of the matter arising from the paper manufactories?—I have been speaking of it now as regards their removal from the stream by this process of oxidisation.

5178. Your answers to the questions which the Honourable Member put to you just now were specially directed to sewage matter?—Entirely so.

5179. I was going to ask you one other question, as to the fact that the weirs restore a great deal of the æration, or do they oxygenate the water again; do they not restore, as it were, the equilibrium of the oxygen?—Yes; in fact the rush of water over the weirs enables them to absorb the oxygen again from the atmosphere.

5180. Sir *G. Bowyer.*] I understood you to say that this refuse from the paper mills is in itself injurious, and can only be made comparatively harmless, or quite harmless, by being mixed with a sufficient volume of water, so as to destroy its noxious qualities?—Yes, if mixed with water in very narrow proportions it would be injurious, because it would render that water putrescent in warm weather; but mixed in a certain proportion, so that putrescence does not take place, I consider it innocuous.

5181. So that in itself it is injurious, but can only be rendered harmless by the greater proportion of water with which it is mixed?—Yes.

5182. Is this a fair illustration: if a vial of prussic acid is poured into a lake it can have no effect at all, but if the same vial of prussic acid is poured into a tumbler of water it would be a deadly poison?—That is not a fair illustration, for this reason, that esparto liquor is not pernicious.

5183. If

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5183. If it were not diluted it would be a poison, would it not?—It would be injurious to drink, in the same way as you drink water.

5184. Then the illustration is a good one, is it not?—It is something like very strong bay tea.

5185. Mr. *Neate.*] You compared it to to the carbonic acid in the air?—Exactly.

5186. Would the air be more wholesome if it had no carbonic gas in it?—Not in the slightest.

5187. Sir *G. Bowyer.*] But the carbonic acid in itself is a poison if inhaled?—Undoubtedly it is a positive poison, it is not a mere negative poison like nitrogen.

5188. But if diluted it becomes comparatively harmless?—Yes.

5189. Should you not prefer to breathe air if it had no carbonic acid in it, such as the air of a salubrious place like Margate; you would say there is no carbonic acid in that?—Yes, there is; at the greatest height of the atmosphere that man has ever reached there is rather more carbonic acid than on the surface.

5190. But if the carbonic acid goes beyond a certain proportion then it becomes unwholesome?—It does.

Professor *John Thomas Way*, re-called; cross-examined by Mr. *Johnson.*

Professor *John T. Way.*

5191. I UNDERSTAND you to have said in your evidence distinctly that the refuse from paper mills is of a very different character from ordinary sewage; that is your opinion, is it not?—Yes; it is not at all like sewage.

5192. You have also stated that there are various matters poured into the river from the process of paper making which you think injurious in themselves; is not that, in point of fact, a question of degree?—Yes; it is a question of degree, undoubtedly.

5193. And depends on the volume of water and the distance at which the water is drawn for any sanitary use from where those manufactures are carried on?—I should say more on the volume than on the distance; paper making refuse is a soluble matter.

5194. The matters consist of lime, first of all; I may take the products generally as lime, alkali, vegetable extracts, and the bleaching salts?—And soda.

5195. I included that in the alkali?—Quite so.

5196. First, as to lime; salts of lime already exist to a great extent in water, do they not?—Yes; and should not be increased.

5197. I mean there is a certain amount of carbonate of lime as a healthy ingredient in water, is there not?—It is not objectionable; it gives hardness to the water, but it is not objectionable.

5198. Do you find any excess of that in the Thames water?—The Thames water is hard water.

5199. Is there any excess of lime in the Thames water?—The Thames water is not so hard, because of the chalk in the other streams which come into it.

5200. There is no excess of lime in the Thames water as compared with other chalk water?—No.

5201. Now, as regards the alkali and the soda, a small proportion of alkali, or carbonate of soda, which is the same thing, is of advantage in softening water, and is effective for that purpose?—I do not know that it would soften water under those circumstances; it is used in large quantities for washing.

5202. And for making tea?—Yes; I do not know whether you can claim for it much softening power.

5203. Is there a softening power in carbonate of soda?—So far as it goes.

5204. Now, as regards the vegetable substance; that is present in nearly all river water, is it not?—Yes, it is present; but the less we have, the better the water is.

5205. Loch Katrine is particularly held forth as a sort of model water for the supply of a population, is it not?—It is a model water so far as fitness is concerned.

5206. Is there not a great abundance of this vegetable extract in Loch Katrine water?—It is sometimes quite coloured with peaty matter.

5207. As regards the bleaching salts (I think I have gone through all the

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ingredients but that), that is a valuable commodity, which it would be extravagant to use more than is absolutely necessary, would it not, in the process of draining?—That is so.

5208. It is economised and used simply in such proportions as are necessary for the operation; and all deleterious properties would be extracted before it found its way into the river?—That is not always the case.

5209. I mean, from accident or mismanagement, it might be found in the river before it had been so deprived of its deleterious properties?—That is hardly quite so; in some cases it is desirable to use it in excess, especially in making brown paper, which gets discoloured afterwards; and therefore it is used in excess.

5210. Is it used in excess for white paper?—If used in excess it is liable to escape.

5211. You mean in spite of certain precautions taken to economise its use it is liable to escape, although not by design at all, and therefore that is a loss to the manufacturer?—Yes, it is a very valuable material.

5212. He would in its use economise it as far as practicable?—Yes.

5213. You say that notwithstanding that in the process of the manufacture it may possibly escape in excess?—Yes.

5214. Now all these properties, no doubt, which you say are many of them injurious, may, if used in excess, be deleterious, although not so in minute portions; is not that so?—That applies equally to everything that you have in the water.

5215. But it applies especially to paper mills?—Yes; if one water is said to be better water than another, it is because it contains less of these impurities than the other; therefore, so far as it goes, anything that is thrown into that water is injurious.

5216. Is it not the fact that one heavy storm will bring down more organic impurity than would emanate from a paper mill in a century?—It may do from a sewered town; I do not know in what other way.

5217. Are there not many impurities on the surface of a town, such as the excrement of animals and other things that must find their way down, and in times of heavy floods come into the stream itself?—It is very probable that manure is washed from the surface of the land.

5218. Is there anything in the analysis of the Thames water taken above Teddington Lock that can show any impurity traceable to the paper mills?—I do not think there is.

5219. Is it not the fact that the Thames water, as supplied by the Chelsea Company and other companies, notwithstanding the amount which you say is brought into them, is frequently more free from organic impurity than the water of Loch Katrine itself?—Yes, that is the case; Dr. Frankland mentioned here just now that there is a difference between the kinds of organic impurity, and the purity of Loch Katrine he would probably have classed as the most innocent.

5220. That is vegetable?—Yes, absolutely vegetable.

5221. You concur with Professor Frankland, that vegetable impurities are innocuous?—That wants a little modification; I heard you ask Dr. Frankland whether the matter which is dissolved out from the esparto grass is vegetable matter; I believe Dr. Frankland said yes, but he would have been nearer the truth if he said it was of vegetable origin, and I think he would say so if he were here now; the fact being that the matter which is dissolved out is of the nature of animal matter, at least one portion of it, and of the vegetable albumen, a given portion of which is dissolved, you really leave more of the vegetable matter in the paper itself.

5222. Do I understand you then to say that there is any animal matter at all decomposed or disintegrated from the esparto grass?—I wish to make it plain, if you please, that there is in all vegetable matter, matter of an animal character that is not of animal origin.

5223. May I take it generally as an abstract proposition, that vegetable matter being cast into the river, and being held in solution, is innocuous in itself?—It may be innocuous, but it is not unobjectionable.

5224. Not unobjectionable, because it discolours?—You cannot tell how far it is noxious.

5225. You cannot tell that it is so?—I believe that the matter which would be

be likely to be dissolved by sodas is likely to be injurious; certainly, if it is in any considerable quantity.

5226. It is almost identically the same thing that you have in animal matter? ——

5227. Do you find that sewage distributed over land is purified by vegetation? —Yes.

5228. Does the same process go on in water; there are weeds, I suppose, at the bottom of the river; is it the case in water also that vegetation will take up all these impurities, and so neutralise them?—There is no doubt that weeds probably grow, from the very fact of the impurities that there are in the water.

5229. But I mean whilst they grow, they deprive the water of that which might otherwise be pure, and taint the water?—They do if allowed to grow.

5230. And they neutralise any prejudicial effect that would arise at times from these impurities?—They will if they are in sufficient abundance.

5231. And I suppose they are increased according to the prolongation of the flow of the water, and the greater volume?—The growth depends upon the relation of those two circumstances.

5232. Mr. *Acland.*] Is it not the fact that the presence of weeds in water in a decaying state is injurious?—When you come to vegetation, such as weeds, it is the accumulation of such matters at one time, and their distribution at another time, which is injurious.

5233. You attribute mischief in water to the presence of decaying weeds?—No; except so far as they are not mischievous to navigation.

5234. Mr. *Johnson.*] The paper makers, I understand, were driven, so to speak, to use well water, in consequence of the stream becoming too bad for their use? —That statement was made to us on one or two occasions.

5235. It is the fact, is it not, that they have always used well water, and could not use that water except at very particular times, for the delicate manufacture of white paper; is not that so?—I do not know that that is so; I know that a good many paper makers use well water, but my conviction is, that at a former time they have used the river water.

5236. Do you attach any importance to animal life being in the river; I mean such as fish; are they compatible, in your judgment, with the condition of the water being deleterious to health?—Do you mean does their existence in the water prove ——

5237. Prove anything or prove nothing?—That is rather a wide question, some fish will not live in impure water; you will not catch trout in impure water; but, on the contrary, there are some fish which will be found at the very mouths of sewers in great abundance.

5238. Sir *G. Bowyer.*] What fish?—Tench or barbel.

5239. Mr. *Johnson.*] Have you ever been up to any of these mills yourself?—Yes.

5240. Have you seen fish there at the very tail of the mill, where the manufacture has been going on?—I have.

5241. Are those fish affected, or not affected by the impurities?—I have seen very fine pike at the tail of the mill.

5242. Of course we all know that pike are very voracious in their appetite, but are they delicate in their constitution?—I do not know that.

5243. At all events do you ascribe at all to the water being in a pure state the existence of those fish?—The refuse waters are discharged irregularly; I believe that is the secret of the whole matter; fish are sometimes to be found there, and sometimes not.

5244. They go where the dilution has rendered the water no longer objectionable?—If you mean to ask me whether the paper making refuse thrown into the River Thames is sufficient to render impure the water of the Thames, so that the fish will not live in it, I say that that is not so; it is locally so; the destruction of fish has been complained of over and over again at particular places.

5245. Mr. *Acland.*] There are some fish that do not live in the River Thames?—Yes.

5246. Do you think that those fish might live in the River Thames but for the impurities?—I think so, certainly.

5247. Mr *Johnson.*] But not the impurities from paper making?—That I do not know; that is not one of the impurities of the River Thames at this moment.

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5248. You have read this Bill, I dare say, have you not?—Yes.

5249. You know that some of the suggestions are for filtering beds, and for evaporation and subsiding reservoir, and also for distribution of sewage over land?—Yes.

5250. In your judgment would it be essential for carrying out those provisions that there should be compulsory powers for the acquisition of land, in order to make them available?—If paper makers have not the land, of course they could not do it.

5251. They could not without land; they could not have recourse to these as remedies, which are proposed as such?—Not with reference to land, certainly; they ought to have some power in that respect, but it is not made compulsory on them.

5252. You know that there is no such provision in this Bill?—I do not say whether there is or not.

Re-examined by Mr. *Phinn.*

5253. Now I have only two or three questions to ask you; in judging of the effect of the operation of paper makers on the river, you must not confine your attention solely to London, must you, because it is possible that Windsor or Reading may want to take water from the Thames?—Yes.

5254. Therefore it is very desirable that the water should be pure not only at the point where London intercepts the water, but at higher points on the river?—Yes, it is very desirable that the water should be pure.

5255. Does it strike you that the paper makers are in this dilemma, either that they pour offensive or impure matter into the water, or they do not; if they do they ought to be regulated, but if they do not they have nothing to fear; does that strike you?—That would be so.

5256. Now, my learned friend says if they do that (but which he denies) that they have a prescriptive right to do it, and that we have no right to drive them to take these measures to avoid it; do you not think that the health of the people is far above the rights of the paper makers?—That would certainly be the common sense of the matter; how long we are to put up with a nuisance for the sake of a prescriptive right I do not know.

5257. Can you doubt that some of these matters which may or do flow into the water at certain distances from the paper makers must be prejudicial to health, whatever tests may show?—*Must*, I perhaps might not say, but they are capable of being so, certainly.

5258. Can you assimilate the vegetable organic matter which comes, for instance, from this esparto grass to the peaty matter which is carried off by the Loch Katrine water?—No, it is not the same thing.

5259. One is recently decomposed vegetable matter, and the other is vegetable matter that has been decomposed for ages, has it not?—I do not know about that; it is no doubt dissolved down daily.

5260. But the peat itself is not of new formation?—No.

5261. You have been on the Scotch moors, I dare say?—Yes, I have.

5262. You know the stratum, do you not, in which peat is formed?—Yes; I wished to explain just now that, with regard to these matters, such as rags, esparto, and all these things, that it is the very worst and most objectionable part that is dissolved; the paper, which is the residue of rags, is of a purely non-nitrogenous quality, therefore the part which you dissolve is the objectionable part.

5263. Has your attention been drawn to the evidence of Mr. F. Buckland; I do not know whether you examined him before the Commission, but the reference I have is to his evidence before the Select Committee, page 32, Question 701; it is in answer to a question by Mr. Dawson Damar: "Are there certain acids coming into the river from the gasworks, and from the naphtha works, and from the paper mills, which are very destructive to fish?—I have this morning carried on a series of experiments to explain that: first of all, there is the refuse from the paper mills, which is excessively pernicious; I had some bleached lime from a paper mill put into a vessel in the proportion of four grains to the gallon; I put a salmon into it, and it died instantly; I hope that the Committee will pay particular attention to this matter, and stop these fellows from putting their horrible poison into the river to kill those fish; they are killing them with the chlorate of lime.

lime. (*The Witness showed the effect of putting chloride of lime into a bottle containing small salmon.*) If a paper mill is close upon our operations where we are turning out the fish, it will kill them off very soon;" do you concur with Mr. Buckland in that view?—If there is much chloride of lime and bleaching powder.

5264. Is it not the case, that at certain times of the year when water is low, the smell from decomposing weeds is very offensive?—I believe that is so.

5265. Is it sufficient to taint the purity of the water?—Yes, it does taint the water.

5266. One matter you recommend to the consideration of whoever manages this river, is the regulation of the growth of these weeds?—Yes; we should wish to get rid of the weeds altogether.

5267. Mr. *Acland.*] I want to ask you a question about the irrigation, because it has been stated that two of the Commissioners are very much interested in the success of irrigation works; you wish to explain that matter to the Committee, do you not?—I do; I understood that some statement of the kind had been made; of course, that refers to Mr. Rawlinson, who has admitted to this Committee that he had a pecuniary interest at Worthing and I suppose it refers to myself, who am the consulting chemist of the Essex Reclamation Company; my connection with that company arises out of the fact that they know I am a great advocate for the application of sewage to land; my opinion and views were formed years ago, and I have never deviated from them in any kind of way, so that they rather take me as an illustration of the principle than pay me, and the fact is, that I am not paid at this moment.

5268. Sir *G. Bowyer.*] In fact, your opinion does not arise out of any interest you have taken in the matter in a pecuniary point of view, but it is on account of your opinion that you are connected with the Company; is not that so?—That is quite so; it is the consequence, not the cause.

5269. Mr. *Acland.*] Are you prepared to say that the success of any irrigation scheme in England will be no source of profit to you?—Not at all.

5270. We have been asking a great many questions upon theories from gentlemen who are not medical witnesses, as to what would be innocuous to health; now, it appears to me that those questions, instead of being addressed to a pure chemist ought to be addressed to a medical man; I have suggested before now that Mr. Simoon, who is about as competent an authority upon such subjects as can be found, should simply be asked this question: I do not think a pure chemist is a competent witness on that subject, with all respect to the chemists. (To the *Witness.*) I think you would say that yourself, Professor Way; the effect upon health of any particular substance, whether animal, organic or inorganic, is not purely a question for chemists?—They are closely connected; because whilst a chemist would not know much about health, a chemist would say that a medical man would not know much of the properties of these very materials.

5271. They are not medicines?—No.

5272. Do you think that a chemist, simply as a chemist, is capable of pronouncing an opinion upon the effects of different substances on the human body. Surely that is a question for a medical man rather than a chemist?—Quite so; the only ground on which we form opinions of that kind is inasmuch as we are so much associated with medical men in those questions.

Mr. *Reilly.*] Your suggestion, sir, shall be taken into consideration.

The *Witness.*] If it is not considered presumptious in me, I should like to say, that having been one of the members of this Commission, I should wish every reasonable indulgence to be given to the paper makers in their operations for getting rid of these things; it is quite true it is not to be done so easily in some cases as in others, and therefore anything that in your judgment would meet that view, I shall be glad to see carried out; I should be particularly sorry if it were thought we were opposed to the operations of trade, because it would neutralise any influence for good that we could have in our future operations; it is not our wish at all to interfere with it.

5273. Mr. *Acland.*] Do you think that all the secondary means for prevent-

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ing mischief have been laid before the Committee, such as relate to purification?—I believe that the paper makers, as soon as they set to work diligently to keep these matters out of the river, will be reasonably able to do so; but then it is not reasonable to suppose that they will, while they have got the power to throw them in.

5274. Which do you think will be the best course to pursue, for the Committee to suggest, in the form of law, any means to be adopted, or to make the practice illegal and leave them to find out the means?—I think they should have every indulgence with regard to time, so that experiments may be tried; and I think, also, that they should have an opportunity of appeal, so that they may not be unjustly interfered with.

5275. But, still, you are of opinion that making the practice illegal is the best course, provided that is done with due consideration?—Yes, it should be done with due consideration.

Mr. *Thomas Rogers*; re-called.

Mr. *T. Rogers.*

5276. Sir *G. Bowyer.*] Mr. Robert Rawlinson, in answer to Question 3122, used the following words: "I am aware that schemes of drainage have been submitted to the Local Board of Reading, and, to their disgrace, be it said, and also of their surveyor, they have been treated with the greatest contempt." Have you anything to say on that subject?—I wish to say that in consequence of that evidence the Local Board of Reading felt it their duty to notice it, and they did so; they wished me first of all to present a series of resolutions to them on the subject, with the view of giving an emphatic denial, and at the same time explaining what they have done, which would clearly show that they were not open to such a severe censure as those words convey.

5277. Will you proceed with your explanation?—In the first place, the minutes of the proceedings of the Board will show conclusively not only that the subject of the drainage of the town has not been treated with contempt by the Board, but that it has received a large amount of anxious and careful consideration; then the proceedings of the Board, in connection with the scheme prepared by Mr. Marshall (on which I was asked a question as to whether he had not resigned his office immediately on that being rejected, implying that the Board had treated him contemptuously in the matter), show that the subject was then discussed and considered at various meetings of the Board. Mr. Marshall's land scheme was not proceeded with, because they differed in opinion as to the merits of the scheme itself, and particularly with regard to the outfall for the sewage, which it proposed to carry into the River Thames. That appears by referring to the minutes of several meetings of the Board, namely, 3rd December 1857, 25th November 1858, 10th February 1859, and a printed report of Mr. Marshall, dated 25th November 1858, which was ordered to be printed by the Local Board. So that that scheme was the subject of discussion for fifteen months. That originated in the report of the Survey Committee. The Board of Health have taken nine or ten months to prepare it. It was then deposited in the Town Hall of the borough for the examination and inspection of the inhabitants of Reading, and the members of the Board. The report which Mr. Marshall presented on it was printed and circulated, and after a lapse of six weeks, on the 10th February 1859, it was considered by the Board; it was discussed, and that scheme was agreed not to be proceeded with by a majority of one only, after several hours' discussion. That is the statement I wish to make with reference to that matter. I wish to add that, in consequence of the difficulty of disposing of the sewage, the Board have provided the best remedy which they can for the cesspool system. They have laid out 13 miles of public drains, which we consider will very largely, if not entirely, remove the evil.

Thursday, 28*th June* 1866.

MEMBERS PRESENT.

Mr. Acland.	Colonel Gilpin.
Sir Michael Hicks Beach.	Mr. Neate.
Sir George Bowyer.	Mr. A. W. Peel.
Lord Eustace Cecil.	Colonel Napier Sturt.
Mr. Milner Gibson.	Captain Vivian.

THE RIGHT HONOURABLE THOMAS MILNER GIBSON IN THE CHAIR.

28 June 1866.

THE Petition of the Freighters of Coal on the River Thames, was read.

Mr. *J. Coates* appeared as Counsel in support of the Petition.

Messrs. *Dyson & Coates* appeared as Agents.

Mr. *Lopez* addressed the Committee in support of the Petition of mill-owners and occupiers of the Upper District of the River Thames, and proposed that the following clauses be inserted in the Bill on their behalf.

(A.)

Marks on weirs to be maintained, and water not to be allowed to fall or rise below or above the marks.

The Conservators shall at all times maintain the present high and low-water marks, and forthwith reinstate the same if obliterated or destroyed, heretofore fixed by the Commissioners on any pound lock, lock, dam or weir in the river, and, notwithstanding anything in this Act contained, shall not knowingly or designedly let the water fall below or rise above such marks respectively, unless for the purpose of effecting necessary repairs to such pound lock, lock, dam, or weir, in which case the repairs shall be executed by them with all reasonable despatch.

(B.)

Millers to retain power of using water for their mills.

Notwithstanding anything in this Act contained, the owner and occupier for the time being of any water-mill shall continue to be entitled to the same rights, privileges and easements of taking and using the water pounded or kept up by the adjoining lock, dam, or weir, for the purpose of working such mill, as they would have been entitled to if this Act had not been passed.

(C.)

Weirs, &c., to be repaired by Conservators.

From and after the passing of this Act, the Conservators shall at all times at their own cost maintain and keep in substantial repair, and except as in this Act provided at the same height as heretofore, all locks, dams, and weirs on the river not heretofore vested in the Commissioners; and in case and as often as any such lock, dam, or weir shall at any time be out of repair, or from any cause whatever be insufficient to maintain the level of the water up to the accustomed and proper height, and according to the high-water mark (if any) affixed thereto, it shall be lawful for the owner or occupier for the time being of any water mill wholly or partially worked by the water pounded or kept up by such lock, dam, or weir, by a notice in writing addressed to the Secretary to require the Conservators forthwith at their own cost, to repair or reinstate such lock, dam, or weir; and in case the same shall not be effectually repaired or reinstated within one month from the receipt of such notice, it shall be lawful for, but not obligatory upon, such owner or occupier forthwith or at any time thereafter to repair or reinstate such lock, dam, or weir, and all expenses incurred by such owner or occupier in effecting such repairs or reinstatement or incidental thereto, shall be forthwith repaid to him by the Conservators, with interest thereon in the

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meantime after the rate of 5 per centum per annum; and in case the same shall remain unpaid for the space of six months, then and thenceforth and so long and as often as any part of such money or of the interest thereon shall remain unpaid, such owner or occupier, and every future owner or occupier for the time being of such water mill shall be entitled to receive, take, and enjoy for his own use all rights, privileges, easements and immunities whatsoever, including tolls for the passage of vessels, which he would have been entitled to if this Act had not been passed, and thereupon all such portions of the several Upper Navigation Acts as hereby repealed shall be so far revived, and for such period or periods of time as may be necessary or convenient for enabling such owner or occupier to obtain and enjoy such rights, privileges, easements and immunities: Provided always, that no owner or occupier of any water mill shall at any time after the passing of this Act be liable to keep any adjoining lock, dam, or weir in repair, any law, statute or custom, to the contrary thereof notwithstanding.

(D.)

In cases of emergency millers may effect immediate repairs.

In case at any time any lock, dam, or weir, or any of the works connected therewith, shall require immediate action to be taken, either for the actual preservation thereof, or for preventing greater further expense in case repairs are delayed, then and in such case and as often as the same shall happen, it shall be lawful for, but not obligatory upon, the owner or occupier for the time being of any adjoining water mill, himself to effect such repairs, or to do such works or portions of repairs as may be required, to prevent greater future damage or expense, and without first requiring the Conservators themselves to effect such repair; and in every such case five-sixths of the expense incurred by such owner or occupier in effecting such repairs, or in doing such works or portions of repairs, as may be required to prevent such greater future damage or expense, shall be forthwith repaid to him by the Conservators, but the other one-sixth part of such expense shall be borne by such owner or occupier.

(E.)

Millers may draw off water in certain cases.

The owner or occupier for the time being of any water mill, desirous of effecting any repairs or alterations in such mill, or of cleansing the mill-stream, may, upon giving not less than seven clear days' notice in writing to the secretary of his intention so to do, draw down the water pounded or kept back by the adjoining lock, dam, or weir, for the space of 48 hours; and may, without notice in case of any accident or emergency, or other reasonable cause, draw down such water for the space of six hours; but except as in this Act provided as aforesaid, no such owner or occupier shall drawn down such water without the consent in writing of the Conservators.

(F.)

Notwithstanding the vesting in the Conservators by this Act of the property in any lock, dam, or weir, the present and future owners and occupiers of the adjoining water mill, and all other persons who, if this Act had not been passed, would from time to time be entitled to such lock, dam, or weir, or to enter thereon, shall continue to have possession and enjoy such and the same rights and privileges of entering upon and of passing and repassing either with or without friends, servants, workmen, or others, over such lock, dam, or weir, and also of cutting the grass growing on such lock, dam, or weir, and of feeding sheep and other animals, and of cutting oziers and other shrubs and trees, as if this Act had not been passed.

(G.)

Reservation to millers of fishing rights under certain circumstances.

Notwithstanding anything in this Act contained, it shall be lawful for the owner or occupier of any water mill to exercise all such rights of fishery, including the right for that purpose of drawing off water pounded or kept up by any adjoining lock, dam, or weir, while water is running over or escaping from such lock, dam, or weir, as he would have been entitled to if this Act had not been passed; provided that the maintenance or exercise of such right does not in any manner injuriously affect the stability of such lock, dam, or weir, or be prejudicial to the navigation of the river, or compel the Conservators to incur any greater expense in keeping such lock, dam, or weir in repair than would otherwise be the case.

(H.)

Conservators not to raise level of water in any mill-tail.

Notwithstanding any of the powers by this Act vested in the Conservators, it shall not be lawful for them to do any act, or to construct any works the effect of which will directly or indirectly be to throw back water on the wheel of any water mill, or otherwise permanently raise the level of the water in any mill-tail.

(I.)

Conservators may reduce height of weirs, &c. on making compensation.

If at any time the Conservators shall be desirous of reducing the height of, or otherwise varying or altering any lock, dam, or weir, or of altogether removing the same, either wholly or to some other site, it shall be lawful for them so to do, upon making compensation to the owner and occupier of any water mill, and every other person injuriously affected thereby, in the manner provided by "The Lands Clauses Consolidation Act, 1845,"

1845," for which purpose such Act shall be incorporated herewith, the Conservators being considered to be the promoters of the undertaking, and the mill, land or other property of the person claiming to be injuriously affected being deemed to be land authorised to be purchased or taken by the Conservators. 28 June 1866.

(K.)

Whereas the locks, dams, or weirs not belonging to the Commission, the property whereof is by this Act vested in the Conservators, are in various states of repair, and it is just that some compensation should be made to those owners or occupiers of water mills who have expended their money in keeping the same in repair, in consequence whereof the Conservators will be saved the expenditure of large sums of money: Be it enacted that it shall be lawful for the owner or occupier of any water mill who shall prove to the satisfaction of the Conservators, or to arbitrators to be appointed in the manner authorised by "The Lands Clauses Consolidation Act, 1845," for settling cases of disputed compensation, that the state of repairs of the adjoining lock, dam, or weir, is such that exclusive of ordinary annual repairs, no permanent repairs exceeding in amount 50 per cent. of the total estimated cost of rebuilding or reinstating such lock, dam, or weir, are likely to be required within the space of 10 years after the passing of this Act for the purpose of maintaining such lock, dam, or weir in a substantial state of repair, then and in every such case the owner or occupier of such water mill shall be entitled to compensation to the extent of 50 per cent. of such total estimated cost, or to such smaller sum (if any) as shall remain after deducting from such 50 per cent. the estimated amount, in value, of the repairs likely to be required within the space of 10 years after the passing of this Act, for maintaining such lock, dam, or weir in substantial repair; and the Conservators shall therefore give to such owner or occupier a bond or mortgage for the amount of such compensation—all such bonds or mortgages to become payable at the expiration of 10 years from the passing of this Act, with interest thereon in meantime, payable half-yearly, at the rate of 4 *l.* per cent. per annum: Provided always, that the total amount of the bonds or mortgages issued by the Conservators under the present provision shall be deemed to be an addition to the amount authorized to be borrowed by them under this Act. Provided further, that the compensation payable under this provision shall, in case of dispute between the owners and occupiers of any lock, dam, or weir, be divisible between them in the proportion, as nearly as may be, in which they would be liable for the repairs of such lock, dam, or weir if this Act had not been passed. Compensation to owners, &c. of locks, if in good repair.

Provided always, that such meeting of the present locks, dams, and weirs in the said Conservators shall not be construed to give to any person or persons whatever, other than the agents or servants of the said Conservators, the right to pass and repass in boats to or from any locks, dams, or weirs now the property of any individual owner or owners, over such portions of the River Thames as have ceased to be navigable since the use of such locks, dams, and weirs for the navigation of the River Thames was discontinued, or to land upon such locks, dams, or weirs.

Mr. *Charles Harrington Witherington*, called in; and Examined by Mr. *Lopez*.

Mr. *C. H. Witherington.*

5278. I BELIEVE you are the owner and occupier of a mill called Sunning Mill?—Yes, I am.

5279. That is on the River Thames?—About three and a half miles below Reading.

5280. Between Oxford and Staines are there 29 mills?—Yes, there are.

5281. Can you give an approximate idea of what the value of those 29 mills is?—I do not know them all.

5282. Do you know about their value?—I should think they would average about 6,000 *l.* each.

5283. Colonel *Gilpin.*] Are they flour mills?—Some of them are flour mills, and there are two or three paper mills.

5284. Mr. *Lopez.*] How long have you been the proprietor of that mill?—I have been the proprietor of that mill since 1852.

5285. Did you purchase it?—Yes.

5286. Have you always had a right to keep up your head of water?—Yes.

5287. I believe the fall of water of the River Thames is very slight, and unless that head of water was kept up you would be deprived of the water?—Yes; the Commissioners never could take the water without giving us notice, and asking our permission, irrespective of paying us for it.

5288. I believe there is a high-water mark, and a low-water mark?—There is.

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5289. And the water is always kept between those two marks?—Yes.

5290. So long as the water is kept between those two marks, there is always a sufficiency of water at the mill?—That depends on how near the high-water mark is; sometimes there is a scarcity of water in the river; we get what there is.

5291. I suppose the low-water mark is of advantage for the purposes of navigation; if the water does not get beyond low-water mark the barges can always navigate?—Yes.

5292. So far the interests of the millers and the navigation are identical?—I consider so.

5293. Of course you know the provisions of the present Bill?—Yes.

5294. What would be the effect of that Bill on your mill?—If the Conservators take the powers that they ask for, and I presume that they will take, or they would not ask for them, my mill will be entirely at their mercy; that is, the value of my mill, and also other mills down the stream.

5295. The weirs and locks will all become their property?—Yes, I presume so.

5296. *Chairman.*] And the navigation would be at their mercy, in the same sense?—Yes; what is their interest is ours; we ought to work together; they would not draw down to injure their own works, but they might draw down to injure us.

5297. Sir *G. Bowyer.*] Are you apprehensive that they would so deal with the water as to destroy your property?—The fact is, that the present Conservators have no mill power in their district, and I cannot at all contemplate their doing so.

5298. They have one?—Not on the Thames.

5299. They have Chertsey mill?—That is not on the river.

5300. Do you suppose that the Conservators would so deal with the water as to destroy the value of your mill?—What I say is, that this Bill gives them the power of doing so.

5301. Mr. *Peel.*] What did you mean when you said the Conservators now take water without paying for it?—They could take it.

5302. How do they take it?—They send to ask us to let them draw down the water.

5303. Have they given you any money payment for so much water which they have taken?—I have never taken it, because I have never asked them for it; they have no power over the water beyond taking through every pound a boat full of water; they have no further power over the river than that. They have only power to compel us to keep up the head.

5304. Mr. *Lopez.*] Then it will come to this, whereas the Conservators are bound to give you a sufficient supply of water for the purpose of working your mill——

Mr. *Phinn.*] You must not assume that.

Mr. *Lopez.*] It will now be in the discretion and power of the Conservators, to do so or not.

Witness.] If I understand the Bill, the Conservators take the power that we now possess; they can do as they please; the Act of Parliament gives them the power to do that, if I read it aright.

5305. In fact, it gives them an absolute control over the water?—Yes.

5306. It is not so at present?—That is not so at present.

5307. With regard to repairing the locks and weirs, what are your powers at present?—I have now to repair my lock and my weir.

5308. But suppose you want to draw down the water for the purpose of the river, what do you do now?—We draw it; we take care to draw it beyond low water mark,

5309. Have you ever had any complaint before the Conservators?—Yes.

5310. As regards drawing it off too long?—I have been a Commissioner for 14 years, and I am on the Committee, and I have never yet heard a complaint against any miller on the stream from any party.

5311. Is it, in your opinion, necessary that you should still have the power of drawing down the water for the purpose of repairs?—I think so.

5312. Will you give me your reasons?—If we have to make a dam, the making of that dam is a most serious expense, when, perhaps, drawing the water

water down for an hour would give us an opportunity of putting in the groundwork of a wall, or whatever we may be doing.

5313. Have you always about you men competent and ready to do your work at a moment?—No, we get men.

5314. Does it very frequently happen that there is a small defect in the weir, which is very easily repaired?—It is very easily repaired if the parties are on the spot, and can attend to it at once.

5315. If it is taken in time?—Yes.

5316. Otherwise it becomes a serious matter?—Yes.

5317. I suppose in cases of flood it might lead to washing away the weir?—It might.

5318. Now I will just ask you about your own mill. I see there is an answer of yours to Question 4276, "Would it be possible or desirable, where there is a considerable length of mill race, to put a weir at the head of it to maintain the water at a certain level, say low-water line, for the navigation?—The millers consider that the mills are older than the navigation, and I do not think you will find any miller agree to that arrangement. As regards myself, it would not affect me"?—The question put to me was as to a sunken weir; the word "sunken" has been left out.

5319. Mr. *Acland.*] I suggested to the learned Counsel that he should ask you to tell us why that is objected to, because it seems a very obvious and reasonable arrangement?—I cannot understand why it cannot be done; we object to it because it would stop our head of water back.

5320. If I understand that question, it is this, that where there is a long deep quantity of water above a mill, the great waste of water might be prevented by putting up a dam above the mill. I want to know why the millers cannot do that; is it a question of expense, or inconvenience, or what is it that you object to?—A dam above a mill is upon what we call the flood stream, and there the weir is put parallel with the river; but, if you put it across the river, surely it would take away the water from the mill.

5321. It is one which would be under your control, and could be closed to enable you to repair your mill without any great waste of water?—No; I think you could not control the water in that way by opening and shutting the weir.

5322-3. *Chairman.*] Supposing there was no navigation, would you not have to be at considerable expense yourself to prevent the water running away to preserve your mill property?—I will answer the question as relates to my own property; I should be glad to take the lock to-morrow off the navigation, and keep it in repair, if they would only give me half the tolls that they take there now; that is as relates to my property, but that might not apply to any other mill.

5324. That is not the question I ask you; if there were no navigation would you be obliged to go to considerable expense to prevent the water running away in order to work your mill?—I should.

5325. Supposing the river was put into a proper condition, and the water kept at a proper depth, would not you still be benefited by the weir by not paying so much?—Dredging the mill head would be of no benefit to me whatever; dredging below the mill head would be of some benefit. We have 25 feet of water below the mill, within 25 yards of the mill.

5326. You stated in your evidence before the Commissioners, that your property would be benefited?—I said it might be, I think you will find.

5327. You stated that if the navigation was put into proper order, and the water kept at a proper depth, that your property would be benefited?—If they dredged below the mill.

5328. You stated that your property would be benefited?—I apprehend it would to a certain extent. I do not want to shirk the question.

5329. Mr. *Lopez.*] You do not claim any compensation for tolls?—I do not claim compensation for tolls. The tolls with me are much lower than they are on many other parts of the river; for instance, I heard in the evidence given that a barge of 60 tons paid 15 *s.* With me a barge going from Sunning to London with 60 tons of goods, and bringing back 60 tons of goods, would only pay 3 *s.* 6 *d.*, not each way, but the double journey.

5330. I do not know whether you know the amounts that have been taken for the toll?—The amount for the last month of my tolls was 4 *l.* 0 *s.* 8 *d.*, that was rather more than the amount I have had for two or three years.

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5331. Do you know whether as much as 200 *l.* have been taken at some mills?—More than 200 *l.* a year have been taken at some of the mills.

5332. Captain *Vivian.*] What is the average now?—The average now is 31 *l.* 8 *s.*

5333. That is the average of how many years?—That was the amount last year; the amount taken in 1846, 20 years ago, was 98 *l.* 8 *s.* 6 *d.*; I am not taking the average.

5334. *Chairman.*] It gets worse and worse?—Yes; the last month is the best I have had for some years, when it was 4 *l.* 0 *s.* 8 *d.*, that will be equal to pretty nearly 50 *l.* for the year.

5335. What is the reason of that?—The month of June is generally a very good month on the river; we are not of course subject to floods or frosts.

5336. Mr. *Acland.*] Is it your opinion that if the navigation of the Thames all the way up is put into good order, that the tolls will improve from the traffic being increased?—I have no doubt the traffic will increase if the tolls are reduced, perhaps one-third, but they must have one-third more traffic on the river to give the same amount, and, of course, there would be more wear and tear.

5337. Do you think that with a good arrangement of the navigation, and the tolls, that it is not at all impossible that there may be a great increase of traffic?—I think so.

5338. Mr. *Lopez.*] Have you ever afforded any assistance to barges going up and down?—Never.

5339. Mr. *Acland.*] Do you think that if the river is put into good order, that the pleasure boats must be called upon to contribute as well as business boats?—I do, decidedly.

5340. Do you think that that would produce such a violent opposition, as to be inexpedient to propose it?—I am fully impressed with the idea that it would be desirable to let each lock as the turnpike gates are let.

5341. You have already given it as your opinion that you think it desirable that it should be done; what I ask is, whether you think it would provoke so much opposition as not to be worth while to propose it?—I do not think so at all.

5342. Sir *M. H. Beach.*] What do pleasure boats pay at a lock for passing through?—Sixpence; a four-oared boat pays one shilling.

5343. Is that the charge authorised by the Commissioners?—Yes, that is the charge authorised.

5344. Mr. *Peel.*] Is there an increased charge for eight-oared boats?—I do not know; we have very few eight-oared boats; I think there may be; I do not know.

5345. Colonel *Gilpin.*] You are just above the bridge?—Yes.

5346. Mr. *Lopez.*] Were the tolls given you in consideration of the obstruction of the water caused to the navigation of the Thames?——

Mr. *Phinn.*] No; I must object to that, because that is a question on the Act of Parliament. Why should you ask the witness as to a disputed question. My objection is, that this occurred before any of us were born. It is contained in the Act of Parliament. This gentleman, who has been a miller since 1852, can know nothing about that.

The *Witness.*] I have been a miller all my life.

Captain *Vivian.*] Clearly he can only form an opinion as we do.

5347. Mr. *Lopez.*] I will now call your attention to the clauses which we propose. Clause A is to this effect: "The Conservators shall at all times maintain the present high and low watermarks, and forthwith reinstate the same if obliterated or destroyed, heretofore fixed by the Commissioners on any pound-lock, lock-dam, or weir in the river; and notwithstanding anything in this Act contained, shall not knowingly, or designedly let the water fall below, or rise above such marks respectively, unless for the purpose of effecting the necessary repairs to such pound lock, lock-dam, or weir, in which case the repairs shall be executed by them with all reasonable dispatch." In your opinion, is that a desirable clause to be inserted in this Bill?—Yes; I think we should have some such clause as that.

5348. Would

5348. Would that be putting you in the same position as you are at present?—Yes.

5349. The next clause is that the millers are to retain the power of using water for their mills: "Notwithstanding anything in this Act contained, the owner and occupier, for the time being, of any water mill, shall continue to be entitled to the same rights, privileges, and easements of taking and using the water pounded, or kept up by the adjoining lock, dam, or weir, for the purpose of working such mill as they would have been entitled to if this Act had not been passed." What is your ground for that?—My opinion is, that we must have some such guarantee, for without that our mill property will be at the mercy of the people who have the management of the river.

5350. Then there is Clause C, which provides that the weirs, &c., are to be repaired at the expense of the Conservators. That, you think, is also a desirable clause to be inserted in the Bill?—It may be. I do not think it is very necessary.

5351. Then there is Clause D, which provides that in cases of emergency millers may effect any repairs: "In case at any time any lock, dam, or weir, or any of the works connected therewith, shall require immediate action to be taken either for the actual preservation thereof, or for preventing greater future expense in case repairs are delayed; then, and in such case, and as often as the same shall happen, it shall be lawful for, but not obligatory upon, the owner or occupier, for the time being, of any adjoining water mill, himself to effect such repairs, and without first requiring the Conservators themselves to effect such repairs; and in every such case five-sixths of the expense incurred by such owner or occupier in effecting such repairs shall be forthwith repaid to him by the Conservators, but the other one-sixth part of such expense shall be borne by such owner or occupier."

Mr. *Phinn.*] Surely you need not go through every one of the clauses.

Mr. *Lopez.*] I am asking the witness to give us information in connection with his own business in regard to the clauses.

5352. Mr. *Phinn.*] Have you ever read them before?—I have read them, but I confound one clause with another.

5353. Mr. *Lopez.*] Will you give me your reasons for desiring that clause?—Some such clause is highly necessary, because if one of the weirs was to give way at all, or one of the locks was to give way, we could, by using sand-bags, stop the hole; I have been compelled to do so ever since I have been at Sunning; and that would prevent a greater wash, and cause less expense to the parties who have the weir to repair, or their lock.

5354. *Chairman.*] Supposing the flood was to carry the lock adjoining your mill, what effect would it have on you, and what would you do?—I should have to repair it.

5355. But the lock?—There are two locks; one lock is my own private lock, and the other is a new cut.

5356. The other lock?—We should put some boards in; there is not a very great wash of water.

5357. What effect would it have on your business if that lock was carried away?—It would seriously impede my business.

5358. I mean the lock of the Conservators; what would you do?—I should apply immediately to the committee; I am on the committee myself.

5359. What would you do?—I should do all I could to stop it myself with sand-bags, and so on; and then I should apply to Mr. Castle, and get him to report on it.

5360. Suppose he told you that he had no money to do the repairs with?—Then I must do it myself.

5361. Therefore, unless you did go to a considerable expense, your property would be injured?—It would be injured.

5362. Mr. *Lopez.*] If the Conservators, at any future time, were to tell you that they had no money to do it with, you would likewise have ultimately to repair it yourself?—That is the great fear that I have.

5363. Therefore, at any rate, you do not get much by the change of the governing body?—The millers gain nothing; the millers cannot be in a better position than they are at present.

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5364. Sir *G. Bowyer.*] If the river was put into a better condition it would benefit the millowners?—If the Conservators took all power over the water from us we should be in a much worse position.

5365. Captain *Vivian.*] It depends on how they administer their business?—Of course, as I said just now, not one of these eighteen Conservators knows anything about mill matters.

5366. *Chairman.*] You have told us that the interest of the navigation, and the interests of the millers are identical?—Yes, but supposing that the navigation gets to a very low ebb.

5367. Captain *Vivian.*] You are aware that it is under the consideration of the Committee whether there are not to be certain gentlemen connected with the interests of the upper water admitted to the Board?—Only three.

5368. They would represent your interests?—I do not think they would.

5369. It would not be to the interests of the Conservators to go in direct antagonism to you?—They are to be elected by these 850 Commissioners, if I understand the Bill right.

5370. Mr. *Peel.*] Would it be of advantage to you if the Board to which you have referred had money?—Undoubtedly. I am in the unfortunate position of being a bondholder. We have got property on the river which is to be confiscated by this Bill.

5371. Sir *G. Bowyer.*] No, it is not to be confiscated?—We are to wait till all the other interests are satisfied.

5372. You have got nothing now?—We have got some property which we can sell, and some property which I should be very glad to buy myself.

5373. Mr. *Lopez.*] Clause F, which we propose, reserves the rights of way over the weirs; what is your ground for wishing to have that clause in the Act?—Many people have a right of way from one part to another.

5374. I think I understood you to say that in many cases millers have a right of way from one side of the stream to the other?—Yes.

5375. They would lose that unless there was some such reservation as this?—Yes.

5376. Clause G is with regard to the fishing rights of the millers, but I will not press that; then there is Clause H, which provides that the Conservators are not to raise the level of the water in any mill tail. "Notwithstanding any of the powers by this Act vested in the Conservators, it shall not be lawful for them to do any act or to construct any works the effect of which will directly or indirectly be to throw back water on the wheel of any water mill, or otherwise permanently raise the level of the water in any mill tail"?—Of course, that would be injurious; I do not see any reason why that should be expected.

5377. Then, by Clause I, the Conservators may reduce the height of the weirs, &c., on making compensation. "If at any time the Conservators shall be desirous of reducing the height of or otherwise varying or altering any lock, dam, or weir, or of altogether removing the same, either wholly or to some other site, it shall be lawful for them so to do upon making compensation to the owner and occupier of any water mill, and every other person injuriously affected thereby, in the manner provided by 'The Lands Clauses Consolidation Act, 1845,' for which purpose such Act shall be incorporated herewith, the Conservators being considered to be the promoters of the undertaking, and the mill, land, or other property of the person claiming to be injuriously affected being deemed to be land authorised to be purchased or taken by the Conservators." You think that desirable?—Yes.

5378. Then the last clause is to provide for compensation to owners, &c., of locks, if in good repair?—If weirs are lowered, of course the head of water that supplies the mill is taken away and run over; that may injure the miller without injuring the navigation to any very great extent.

5379. Sir *G. Bowyer.*] What reason have you to suppose that the Conservators will go out of their way to injure you?—That I will not say; we always like to take all the care we can to protect ourselves.

5380. I apprehend that the Conservators cannot injure you without, to some extent, injuring themselves?—Yes, I think they could, if they were, as they propose to do, to lower the sills to the locks.

5381. How do you know that they propose to lower the sills to the locks?—They do by their Bill.

5382. Colonel *Gilpin.*] You mean that they have the power of doing that?—They have the power.

5383. Mr. *Acland.*] Your opinion is that, in the interests of the navigation, the Conservators may, if they are not checked, think only about the navigation, and disregard the interests of the millowners, and you wish to have some protection?—I do.

5384. At present, the works on the river, such as the locks and weirs, are considered with reference to the present level of the water?—They are.

5385. If the present level of the water was lowered, would not that necessitate new works, or a great alteration in these works, added to a very large expense?—Of course it would; it would ruin the mills. We have so little fall; only 4 feet 1 inch. What we say is, that you take away a little of the head-water. Suppose you reduce the head-water 6 inches, you would ruin the millowners.

5386. If you could do it, you would require a great alteration of the level?—We could not do that; our water is all thrown to the bottom. We cannot have the water taken from the centre.

5387. Sir *M. H. Beach.*] Has any alteration been made which has made things worse since you have been at your mill?—None.

5388. Has any supervision been exercised by the Commissioners over you?—No; so long as we do not keep the water above high-water mark they do not interfere with us.

5389. They have never visited you to see that you do not do so?—I have never heard the smallest complaint from any party.

5390. You are aware that that has been done on the stream at some places, I dare say?—I am not aware of that.

5391. It is in evidence before the Commissioners, that such has been the case at two or three mills?—That I have not seen.

5392. Mr. *Lopez.*] Would you not have to lower the water wheels in order to accommodate them to the altered level of the water?—Yes.

Cross-examined by Mr. *Phinn.*

5393. We have the advantage of seeing a Thames Commissioner, a bond holder, and a gentleman living just at Reading, all in the same person?—Yes.

5394. I will ask you one or two questions as a Thames Commissioner; are you here to deny the statement of the Commissioners in page 24 that, "Repeated complaints have been made before the Thames Commissioners of millers drawing the water too low for the navigation"?—As far as my knowledge goes, I am quite prepared to deny it, because I never heard a complaint, and I have been at a great many meetings.

5395. However, they say so; are you aware of this, that "millers are in a lawless condition, waging petty war against each other"?—No; I cannot say that I am.

5396. If that is the true state of things, do you not think that it is high time some authority should stop it?—No; I do not think there is any necessity for that.

5397. Now, with reference to your mill tail that you have spoken of, you are afraid of an accumulation below it; in point of fact, under the present circumstances, have they not allowed an ait to go right up below the mill tail?—No; that is on the large river.

5398. So that it pounds back your tail water;—No, it does not pound back the tail water; but when we have a pound, we draw through another lock, and then it does pound back that water; but where we cannot give relief of that kind, by drawing it over the aits that I spoke of in my evidence before the River Commissioners, it must tend, of course, to stop the water back.

5399. Now, I will refer you to this answer which you gave to Question 4284; I will not read the question, because the answer is quite enough. Is this true? "I am quite satisfied of one thing, that the present system cannot go on; everything is out of repair all the way down; nothing has been well done; all that has been done for years has been patchwork"; is that still your opinion?—Quite so; I do not deny that.

5400. Then what you think is, that everybody should be interfered with but

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the millers?—No; I do not see why the river should not be put in very good order, and yet give the millers the very few rights we ask for.

5401. You want the river to be put in a good state of repair, but you want all the millers' old privileges to be kept up?—I think we are entitled to have them; as I said before, our interests and the interests of the navigation are the same; you call this a Navigation Bill.

5402. Now, you are asked this; by the giving up of this ait your water is throttled?—In flood time; but that does not affect the mill tail.

5403. I will ask you a question or two about the usual high-water mark; that is put there so as to regulate the flood water?—Yes.

5404. Are not complaints frequently made by the landowners that the mill-owners keep the water above the flood mark, and send it over their lands?—I never heard a complaint; I have been asked to draw the water down during the time they were haymaking, when there was a summer flood.

5405. When the water got a little above high-water mark?—We draw all the water we can, as we did during this last year.

5406. Then it does get above high-water mark?—We cannot help it; we know there is a long weir of 213 feet.

5407. We are quite aware that Mr. Witherington does everything that is right, but other millers may not be quite so careful?—I do not think you must run the millers down.

5408. Now, with regard to low-water mark, is it not the case, that with mills of more improved construction than there are on the Thames you can work them with much less water by what they call turbines?—I have asked parties to give me their opinion about that, who are very good engineers, and they tell me that the Thames is not a very suitable river for turbine wheels.

5409. Do you work with an under-shot wheel?—No, a ground-shot wheel.

5410. Now, with regard to those questions which are in dispute between us, you know the principle of compensation is to some extent admitted, but I want just to see how it will affect your interest; have you spent some 600 *l.* or 700 *l.* within the last few years in maintaining your weir?—I have spent 1,100 *l.* in making the weir and lock.

5411. That you do under Act of Parliament?—I did that under the impression that no such Bill as this would be introduced to deprive me of the lock and weir.

5412. You are getting about 30 *l.* a year at present?—Yes.

5413. That pays you the interest of your money at 4 per cent.?—Yes, but then it gives me the power over the water.

5414. Your suggestion, as I understand, is this: that the Conservators shall take in future the repairs of the weir, and they are to pay you 50 per cent. of what would be calculated would be received on a 10 years' collection; is that your principle?—All this money having been expended on the weir, I look at the weir now and think that it will not cost me a shilling for the next 25 years; then I think, giving up this weir in this good state now, I may, if the Conservators, some 10, 12, or 20 years hence, find the river a failing matter, have this weir turned over to me again, and then look to me to repair it, and they will have taken the tolls during the whole of that time.

5415. But, in the first place, if it is taken away from you and vested in them, you cannot be forced to take it without another Act of Parliament?—I must take it if I occupy the mill.

5416. I think you formed that judgment, did you not, in the first place, when the Commissioners had not got the 5,000 *l.* a year out of the water companies?—They certainly had not got the 5,000 *l.* a year then; I am very glad to hear that they have got it now.

5417. Are you of opinion that, if the navigation is put in good order, that you and the other millers will use it?—Do you mean will use the navigation?

5418. Yes?—Most certainly I do. I shall not use it more than I do now.

5419. Now, only one question about the repairs. Your mill, of course, is on a different channel to that of the main river, is it not. There is a side channel?—Yes, there are three channels, one for the waste water, one for the navigation, and one for the mill.

5420. How far above your mill is the divergence of your mill channel from the navigation channel?—I should think about 200 yards.

5021. What

5421. What I wanted to ask you was in case of repairs. Supposing you wanted to occupy several days in repairs, would it not be perfectly feasible to throw a dam across the top of the water where it forks?—It would be very feasible, but very expensive.

5422. But still you would not stop the navigation; by that means the navigation then can go on with repairs?—I should not stop the navigation.

5423. Not if you let down the water altogether to repair your mill?—It is impossible to let the water down very low where I am situated.

5424. I mean with reference to your own mill?—Yes.

5425. There are other mills on a much narrower channel, where the proposed damming would be less expensive?—I do not know.

Re-examined by Mr. *Lopez.*

5426. This dam would be a very expensive affair, in your opinion?—The expenses of making a dam are very serious, indeed.

5427. If anybody else puts up a dam for you, at their own expense, you have no objection to their doing so?—No, and I should be very much obliged to them.

5428. You have been asked about the Commissioners, and you spoke about their being in insolvent circumstances; if they were, for the purpose of working your mills, you would have to repair the weirs, of course?—There would not be water enough to drive one-horse power.

5429. I believe, owing to the very little fall in the river that there is, you cannot work turbines?—No; but I am not an engineer.

5430. Mr. *Acland.*] Are you prepared to say that that applies to the whole of the Thames?—I apprehend so; because there are no turbine wheels on the Thames.

5431. You have a very small fall, have you not?—4 feet 1 inch.

5432. There are mills which have a much greater fall than that on the Thames?—Very few; that is about the average. We have a running body of water in the Thames.

5433. Mr. *Lopez.*] Do you know as a fact that Mr. Littleboy spent 1,200 *l.* a year lately on his weir?—I do not know that as a fact; I have heard that he has spent a great deal of money, but I did not know it as a fact.

5434. Then it comes to this, that you do not object to this Bill, provided there is adequate protection afforded you?—No; if they will give us the same protection that we have got now. Mr. Phinn said just now that the millers were not paid for the water, and that the millers had to draw up their boats; that is a mistake.

5435. That is not so?—That is not the fact.

5436. They are paid for the abstraction of the water?—They are paid for the water that they take. At Sunning Mill, where they earn 200 *l.* a year, the water was drawn off from four o'clock to six o'clock on Wednesday, and from two o'clock to six o'clock on the Saturday.

5437. Mr. *Acland.*] Are you prepared to say that if there is a well constituted Board of management for the whole of the Thames, with the power of making bye-laws, of which due public notice is given, and which are not to come into operation without the sanction of the Board of Trade, that that system would not give you all the protection which you would require?—I am not prepared to say it would not, but my opinion is that it would work injuriously to the millers.

5438. You want to have the power in your own hands of bringing an action against the Conservators?—Yes; we want no more power than we have now.

5439. Do you not think that, looking at the complicated interests which are to be adjusted, because there are other interests besides the millers' involved in this matter, that, on the whole, a system of bye-laws and regulations might really combine all the different interests?—I think, at all events, it would be very desirable indeed to the millers, who have very great interests on the river, that they should have some representative.

5440. That is not the point of my question; are you now prepared to state that the best thing that the Committee can do is not to set to work to make as

Mr. *C. H. Witherington.*

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good a Board, and give it reasonable powers and checks?—If you ask me as a miller——

5441. No; I ask you as a sensible man, which I take you to be?—You must allow me to put my interest as a miller into the scale.

5442. You are something besides a miller; will you answer the question, not as a miller, but as a man of common sense?—I dare say it is; I should be very glad to see the river put in good order.

Mr. *Lopez* stated that he had several more witnesses whom he had intended to call, but, after what had fallen from the Committee, in the exercise of his discretion, he should not call them.

Mr. *Liddell* then addressed the Committee on behalf of Eton College.

Mr. *Smith* (of the firm of Stephens and Smith) then addressed the Committee on behalf of Mr. Granville, the owner of Sandford Mill.

Mr. *Toulmin Smith* stated that the water companies had drawn up certain clauses to carry out the proposal made to the Committee on the 13th of June, which had been forwarded to the Promoters, but they had not yet received any reply as to whether they would consent to them or not, and he applied to the Committee to adjourn till to-morrow morning, in order that a reply might be sent, because, unless the clauses were agreed to, they wished to withdraw in order that they might not be prejudiced if it was necessary to oppose the Bill in the House of Lords.

Mr. *Phinn* suggested that the Preamble might be passed with reference to the other clauses, and the introduction of the proposition of the water companies into the Preamble might be either postponed, or there might be a recital inserted in the Preamble, which should govern the clauses.

Mr. *Toulmin Smith* stated that, as long as his clients were not prejudiced in their right to oppose in the House of Lords, he did not object.

Mr. *Phinn* was then heard in reply.

Friday, 29th June 1866.

MEMBERS PRESENT:

Mr. Acland.	Mr. Milner Gibson.
Sir Michael Hicks Beach.	Mr. Neate.
Sir George Bowyer.	Mr. A. W. Peel.
Lord Eustace Cecil.	Captain Vivian.

THE RIGHT HON. THOMAS MILNER GIBSON IN THE CHAIR.

29 June 1866.

Mr. *Phinn* stated that, subject to the approval of the Committee, the Promoters had agreed with the Water Companies upon the following amendments and clauses:—

THAMES NAVIGATION BILL.

AMENDMENTS and CLAUSES proposed by the FIVE LONDON WATER COMPANIES taking WATER from the *Thames*, with Alterations and Additions suggested on behalf of the Promoters.

Preamble, Page 4.—After line 2, insert (new paragraph).

And whereas it is expedient that provision be made in this Act for preventing the pollution of the Thames between Cricklade and Staines, and that application for another Act for preventing the pollution of the Thames between Staines and Teddington be made to Parliament by the Conservators:

And whereas the companies constituted for supplying water within the Metropolis, and drawing water for that purpose from the Thames, namely, the Governor and Company of Chelsea Waterworks, the Company of Proprietors of Lambeth Waterworks, the Grand Junction Waterworks Company, the Southwark and Vauxhall Water Company, and the Company of Proprietors of the West Middlesex Waterworks (in this Act referred to as the Five Metropolitan Water Companies), have, in consideration of the benefits which will thereby accrue to them, consented to contribute as in this Act provided.

Clause 42A.

Provision as to passing through disused portions of navigation.

Provided always, that the vesting by this Act of any lock, dam, or weir, in the Conservators shall not give to any persons other than the Conservators, their agents or servants, the right to pass and repass in boats to or from any lock, dam, or weir, at the passing of this Act, the property of any individual owner, over any portion of the Thames that has ceased to be navigable since the use of such lock, dam, or weir, for the navigation of the Thames, was discontinued, or to land upon such lock, dam, or weir.

Page 16, new clause to be substituted for Clause 48.

Clause 48A.

Notice for discontinuance of existing sewerage works.

Whenever any sewage or any other offensive or injurious matter is caused or suffered to flow or pass into the Thames, or is caused or suffered to flow or pass into any river, stream, cut, dock, canal, or watercourse communicating with the Thames, at any point within three miles of the Thames, measured in a direct line therefrom, in such manner that the same is carried, or is likely to be carried, into the Thames, then and in every such case the Conservators, within a reasonable time after knowledge of the fact, shall and they are hereby required to give notice in writing under their common seal, to the person causing or suffering the same so to flow or pass, to the effect that they require him to discontinue the flow or passage thereof as aforesaid within a time to be specified in the notice,

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not being in any case less than 12 months, or more than three years: Provided that the Conservators may, if they think fit, at any time and from time to time extend the time specified in the notice by writing under their common seal.

Page 16, Clause 50 to be omitted.

Insert the following clauses:—

Clause (A).

Surface of river to be scavenged.

The Conservators shall cause the surface of the Thames to be (as far as is reasonably practicable) effectually scavenged, in order to the removal therefrom of substances liable to putrefaction.

Clause (B).

Contributions by the Five Water Companies.

The Five Metropolitan Water Companies shall each pay to the Conservators the annual sum of 1,000 *l.*, payable by equal half-yearly payments, on the 24th day of June and the 25th day of December in every year, the first half-yearly payment to become due on the 25th day of December 1866, such payments to be irrespective of and in addition to any payments otherwise payable to the Conservators by the Five Companies, or any of them.

Clause (C).

Contributions of companies to be first charge on their receipts after existing debts, &c.

The payments to be made under this Act by the Five Metropolitan Water Companies respectively shall be the first charge on the net receipts of the respective companies, after and subject only to any debts or charges at the passing of this Act, payable thereout or charged thereon respectively, and in priority to any claim of any shareholders, stockholders, proprietors, or members of or in the respective companies, to any dividend or share of profits or receipts; and from and after the 25th day of December 1866 it shall not be lawful for any of those five companies at any time to pay or divide any dividend or share of profits or receipts to or among any shareholders, stockholders, proprietors, or members of or in that company, unless and until the same company have paid to the Conservators the half-yearly payment accrued due from that company under this Act at the then last preceding 24th day of June or 25th day of December, as the case may be.

Clause (D).

Payments of companies to be without deduction, and free from taxes, &c.

The half-yearly payments to be made as aforesaid by the Five Metropolitan Water Companies respectively shall be made without deduction; and all sums so paid shall, in the hands of the Conservators, be free from all Parliamentary, parochial, and other general and local taxes, rates, and assessments whatever.

Clause (E).

Provision for control by water companies of works of Conservators.

In case, at any time after the passing of this Act, any work is done or executed, or proposed to be done or executed, by the Conservators which, in the opinion of any of the Five Metropolitan Water Companies, will injuriously affect either the flow or the purity of the water of the Thames, above or at the place where such company draws its supply, the company may give notice in writing, under its common seal, to the Conservators, requiring them to alter such work, or not to do or execute the proposed work, as the case may be; and thereupon the matter shall be referred to some competent and impartial engineer nominated in that behalf by the Board of Trade, who shall decide what shall be done in the premises, and whose decision shall be final, and the costs of every such reference shall be in the discretion of the referee.

Clause (F).

Conservators to apply to Parliament for further powers.

The Conservators shall apply to Parliament, so soon as the usage and practice of Parliament will permit, for an Act containing such provisions in relation to the Thames between Staines and Teddington as are not already in force in relation to that part of the Thames, and as are contained in this Act in relation to the Thames between Cricklade and Staines, or such other provisions as will enable them efficiently to preserve and purify the waters of the Thames.

Mr. *Phinn* concluded his reply on behalf of the Promoters, and handed in the following Table:—

29 June 1866.

THAMES NAVIGATION.

RETURN of the Number of PLEASURE BOATS kept on the River between *Oxford* and *Staines*.

	For Hire.	Private Boats.	TOTAL.
At and in the neighbourhood of Oxford	350	130	480
Ditto Iffley and Sandford	14	23	37
Ditto Abingdon	20	4	24
Between Abingdon and Benson	4	16	20
At Benson	5	5	10
At Wallingford	17	13	30
Between Wallingford and Reading	33	53	86
At Caversham and Reading	71	15	86
Between Reading and Henley	13	24	37
At and in the neighbourhood of Henley	39	34	73
Ditto Great Marlow	48	10	58
Ditto Cookham	30	17	47
Ditto Boulters	-	-	30
Ditto Maidenhead	-	-	95
Between Maidenhead and Windsor	4	22	26
At Windsor and Eton	-	-	300
At Old Windsor	10	28	38
At Bell Weir	15	10	25
		TOTAL	1,502

(signed) *James Castle*,
General Surveyor.

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The room was ordered to be cleared.

After some time, Counsel and parties were called in.

The *Chairman* stated that the Committee had agreed to the following Resolutions:—

1. That the Upper Navigation Commissioners should be discontinued.

2. That there should be one governing body for the Thames above and below Staines.

3. That the governing body should be the Conservators of the River Thames, with a modification of their constitution.

4. That above Staines, the Conservators should have the like powers as they have below Staines, and also the powers now belonging to the Upper Navigation Commissioners; but in order to facilitate land drainage between Cricklade and Oxford, provisions should be made allowing an appeal to the Board of Trade in the event of the Conservators withholding their consent in any case in which such consent is requisite under the Land Drainage Act, 1861.

5. That five members should now be added to the body of the Conservators.

6. That of these, four should be elected as proposed in the Bill.

7. That the remaining one should be appointed by the Board of Trade.

8. That the proposal of the Five Metropolitan Water Companies, taking water from the Thames (dated 14th June 1866), should be accepted.

9. That it is not at present necessary to raise funds by a rate or tax on riparian proprietors, or on towns situated on the Thames.

10. That it is expedient that stringent provision be made as soon as practicable for preventing the pollution of the Thames above the metropolis, and that for that purpose provision should be made in the Bill in relation to the district to which the Bill applies, namely, between Cricklade and

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Staines, and that provision should be further made requiring the Conservators to apply next Session for like powers in relation to the Thames between Staines and Teddington.

11. That, with respect to paper-makers, the provisions for preventing pollution should be restrained from being put in operation until the expiration of six months after the passing of the Act, except as to dry refuse.

12. That the Committee will now proceed to settle the clauses of the Bill in accordance with the foregoing Resolutions, and will afterwards make such modifications in and additions to the Preamble as appear requisite to adapt it to the clauses as settled, the Preamble being now taken as proved, subject to such modifications and additions.

The Preamble was postponed.

The Committee then proceeded with the consideration of the clauses.

Clauses 1 and 2 were read and agreed to.

Clauses 3 to 23, inclusive, were postponed.

Clauses 24, 25, and 26 were severally read, and agreed to.

Clause 27 was read.

Mr. *O'Malley* was heard in opposition to the clause.

Mr. *Phinn* was heard in support of the clause.

Mr. *O'Malley* was heard in reply, and had not concluded when the Committee rose.

Monday, 2nd July 1866.

MEMBERS PRESENT:

Mr. Acland.	Mr. Neate.
Sir George Bowyer.	Mr. A. W. Peel.
Lord Eustace Cecil.	Colonel Napier Sturt.
Mr. Milner Gibson.	Captain Vivian.
Colonel Gilpin.	

THE RIGHT HON. THOMAS MILNER GIBSON, IN THE CHAIR.

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Mr. *O'Malley* continued his Reply in opposition to the 27th Clause, and proposed the following clause in substitution of it: "The Conservators are hereby authorised and required, upon request, to cause an inquiry to be made in manner provided by 'The Lands Clauses Consolidation Act, 1845,' as to the amount of compensation, if any, to be paid by the Conservators to Mr. Robert Danbe, and his mortgagee, Mr. Thomas H. M. Fairbrother, and to the warden or rector and scholars of Lincoln College, Oxford, or to any other person in respect of the tolls, rates, or payments belonging to or claimed by them under or by virtue of the 12th and 13th sections of the Upper Navigation Act of 1771, which may be taken away or injuriously affected by the provisions of this Act, such compensation to be assessed as if notice had not been given for this Act, and to be either by way of annual payment, or payment in a gross sum, and to be charged upon and payable out of such of the monies coming to the Conservators under this Act, or in such order of priority as the party by or before whom such inquiry shall be had shall determine."

Compensation to certain toll owners.

Mr. *Reilly* objected to the words, "or to any other person."

Mr. *O'Malley* stated that he had no objection to strike out these words.

Mr. *Reilly* stated that then the question would arise, out of what fund the compensation was to be paid, and suggested, that as this was a question in which the Conservators were mainly interested, that Mr. Clerk should express their views.

Mr. *Clerk* then addressed the Committee, and objected to the clause proposed by Mr. O'Malley.

Mr. *O'Malley* was heard in reply in support of his clause.

The room was ordered to be cleared.

After a short time, Counsel and parties were called in, and informed by the Chairman that the Committee had agreed to the following Resolutions:—

1st. The Committee are of opinion that Mr. Danbe is entitled to compensation for the value of his tolls, and that the said tolls should be valued as they stood before the notices were given for this Bill by arbitration.

2nd. That the compensation should be charged on the surplus arising, from the actual navigation tolls, after paying all expenses of maintenance with power to the Conservators to redeem the same.

Clauses 27 and 28 were then read and agreed to.

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Clauses 29 to 41 inclusive, were postponed.

Mr. *Reilly* proposed the following addition to Clause 42: "And the Conservators shall have free access by land and water to every such lock, dam, or weir, for the purposes of repair and other necessary purposes: Provided always, that if any person having or claiming any estate in any such lock, dam, or weir, within three months after the passing of this Act, gives notice in writing to the Conservators that he objects to the vesting of such lock, dam, or weir, in them, then and in every such case the following provisions shall have effect:

(1) The Conservators, may, if they think fit, by deed, disclaim such lock, dam, or weir, and thereupon the same shall be and remain as if this section had not been inserted in this Act:

(2) If the Conservators do not so disclaim any such lock, dam, or weir, then it shall be referred to an arbitrator, appointed by the Board of Trade, to determine whether or not the same should be retained by the Conservators; and, if so, on what terms or conditions, and the award of the arbitrator shall be final and binding:

(3) If in any such case the arbitrator awards that the lock, dam, or weir should not be retained by the Conservators, they shall forthwith by deed release the same, and thereupon the same shall be and remain as if this section had not been inserted in this Act:

(4) The costs of every such arbitration shall be in the discretion of the arbitrator."

Mr. *Lopez* objected to the addition, and proposed this alteration: "The Conservators may, if they think fit, by deed, disclaim such lock, dam, or weir, and thereupon the same and the right to the old lock dues at such lock or weir, shall be and remain as if this Act had not been passed."

The *Committee* decided against Mr. Lopez' Amendment.

Mr. *Reilly* then proposed Clause 42 A: "Notwithstanding anything in this Act, and until it is otherwise provided by bye-law, any owner or occupier of any mill may draw down the water to such extent and at such times as may reasonably be required for the repair of such mill or any floodgates or waterworks belonging thereto, and for the purpose of cleansing the mill-stream."

Mr. *Lopez* stated that he only objected to the words, "until it is otherwise provided by bye-law."

The *Chairman* stated that the Committee were against the alteration proposed by Mr. Lopez.

Clause 42 A, was then agreed to.

Clause 42 B, was then read.

Mr. *Lopez* proposed an amendment to the effect that the millowners' right of way should be preserved.

Mr. *Reilly* stated that there would be no objection to that.

Upon the suggestion of Mr. Lopez, the clause was postponed, in order that himself and Mr. Reilly might settle the words at a future time.

Mr. *Reilly* proposed the following addition to Clause 43: "But so as not to interfere in the case of any mill with the maintenance of as efficient a head of water for the purposes thereof as at the passing of this Act may lawfully be maintained for those purposes, and in case of any difference between the Conservators and any millowner relative to the exercise of the powers by this section vested in the Conservators, the same shall be determined by a referee appointed by the Board of Trade, whose decision shall be final."

Upon the suggestion of one of the members of the Committee, the word "referee" in the last line but one of the addition was altered to "arbitrator," and the clause with the addition was then agreed to.

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Mr. *Reilly* proposed that Clause 43 A should be inserted in the Bill, which is as follows: "In case at any time after the passing of this Act, any work is done or executed, or proposed to be done or executed, by the Conservators, which, in the opinion of any of the five metropolitan water companies, will injuriously affect either the flow or the purity of the water of the Thames, above, or at the place where such company draws its supply, the company may give notice, in writing, under its common seal, to the Conservators, requiring them to alter such work, or not to do or execute the proposed work, as the case may be; and thereupon the matter shall be referred to some competent and impartial engineer, nominated in that behalf by the Board of Trade, who shall decide what shall be done in the premises, and whose decision shall be final, and the cost of every such reference shall be in the discretion of the referee."

Mr. *Clerk* objected to the clause on the part of the Conservators.

Mr. *Toulmin Smith* was heard in support of the clause.

The *Chairman* stated that the Committee were in favour of Clause 43 A being inserted.

Clauses 43 B, 43 C, and 43 D, were then read and agreed to.

Mr. *Coates* proposed the following as clause 43 A: "Provided that nothing in this Act contained shall take away or diminish the right and property now enjoyed by and vested in Robert Campbell, Esquire, of Buscot Park, his heirs and assigns, in and over Buscot Weir and Eaton Weir, in the county of Berks, and the locks and works connected therewith respectively; or the liability to repair and amend the said locks and weirs and the works connected therewith; or the right and privilege enjoyed by him of damming up the waters of the River Thames at the said weirs to the height of the present flash mark, and the following provisions shall relate to the said weirs:

(*a*) The property, right, and privilege hereby reserved to the said Robert Campbell, his helrs and assigns, shall not be used or exercised, excepting for the purpose of working water wheels at Buscot and Eton respectively.

(*b*) In the exercise of the said right and privilege the said Robert Campbell, his heirs and assigns, shall obey all reasonable rules and regulations made by the Conservators.

(*c*) It shall no longer be lawful for the said Robert Campbell, his heirs or assigns, to demand or receive the toll or payment hitherto levied by him on vessels passing the said docks and weirs; or to demand or receive any other toll or payment with respect to vessels passing by or through the same."

After some discussion, the clause was amended as follows: "Provided that nothing in this Act contained shall take away or diminish any right and property now enjoyed by and vested in Robert Campbell, Esquire, of Buscot Park, his heirs and assigns, in and over Buscot Weir and Eton Weir, in the county of Berks, and the locks and works connected therewith respectively; or the liability to repair and amend the said locks and weirs, and the works connected therewith; or any right and privilege enjoyed by him of damming up the waters of the River Thames at the said weirs; and the following provisions shall relate to the said weirs:

(*a*) Any property, right, and privilege hereby reserved to the said Robert Campbell, his heirs and assigns, shall not be used or exercised, excepting for the purpose of working water-wheels at Buscot and Eton respectively.

(*b*) In the exercise of any such right and privilege, the said Robert Campbell, his heirs and assigns, shall obey all bye-laws, rules, and regulations made by the Conservators.

(*c*) It shall no longer be lawful for the said Robert Campbell, his heirs or assigns, to demand or receive the toll or payment hitherto levied by him on vessels passing the said docks and weirs; or to demand or receive any

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other toll or payment with respect to vessels passing by or through the same."

Clause 44, as amended, was read.

Upon the suggestion of Mr. Liddell, clauses 44 and 45 were taken together.

Mr. *Liddell*, upon behalf of the freighters of coal, &c. on the River Thames proposed the insertion of the following proviso: "Provided that the following restrictions shall apply to the fixing and levying of tolls:—The powers hereby granted to the Conservators shall not be used for the purpose of prejudicing or favouring particular parties, or for the purpose of unfairly creating a monopoly in the hands of particular parties, but such tolls shall be at all times charged equally to all persons, and after the same rate, whether per ton, per mile, or otherwise, in respect of all vessels or goods of the same description conveyed over the river or any part thereof; and no reduction or advance in any such tolls shall be made either directly or indirectly in favour of or against any particular person using the river. If any person liable to the payment of such tolls or charges shall deem himself aggrieved by the exercise of the powers hereby granted to the Conservators, he shall state in writing to the Clerk of the Conservators the subject-matter of his complaint, and may demand that the said matter, if not remedied, may be referred to arbitration, and the same shall be referred to an arbitrator to be appointed by the Board of Trade on the application either of the Conservators or of the party complaining; and the provisions of 'The Railways Clauses Consolidation Act, 1845', with respect to the settlement of disputes by arbitration shall, so far as they are applicable, apply to every such arbitration."

After some discussion it was agreed to adopt the language of the 17 & 18 Vict. cap. 31, s. 2.

Clauses 46, 46, 46A, 46B, 46C, and 46D, were severally read and agreed to.

Tuesday, 3rd July 1866.

MEMBERS PRESENT:

Sir George Bowyer.	Mr. A. W. Peel.
Mr. Milner Gibson.	Colonel Napier Sturt.
Mr. Neate.	Captain Vivian.

THE RIGHT HON. THOMAS MILNER GIBSON, IN THE CHAIR.

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THE consideration of the Clauses was further proceeded with.

Clause 47 was read.

After some discussion, the clause was agreed to, amended as follows:—

Prohibition of sending sewage into river where not so sent at passing of Act.

"From and after the passing of this Act, it shall not be lawful for any person to do any of the following things, namely,—

"(1) To open into the Thames any sewer, drain, pipe, or channel, with intent or in order thereby to provide for the flow or passage of sewage, or of any other offensive or injurious matter.

"(2) To cause, or without lawful excuse (the proof whereof shall lie on the person accused), suffer any sewage or any matter aforesaid to flow or pass into the Thames down or through any sewer, drain, pipe, or channel, not at the passing of this Act used for that purpose.

"(3) To open into any river, stream, cut, dock, canal, or watercourse, communicating with the Thames, at any point within three miles of the Thames, measured in a direct line therefrom, any sewer, drain, pipe, or channel, with intent or in order thereby to provide for the flow or passage of sewage, or of any matter aforesaid, in such manner that the same will be carried, or be likely to be carried, by, through, or out of that river, stream, cut, dock, canal, or watercourse into the Thames.

"(4) To cause, or without lawful excuse (the proof whereof shall lie on the person accused), suffer any sewage, or any matter aforesaid, to flow or pass into any such river, stream, cut, dock, canal, or watercourse, at any point within the distance aforesaid, down or through any sewer, drain, pipe, or channel, not at the passing of this Act used for that purpose, in such manner that the same will be carried, or be likely to be carried, by, through, or out of that river, stream, cut, dock, canal, or watercourse into the Thames.

If any person does any act or thing in contravention of this enactment he shall, for every such offence, be liable on summary conviction to a penalty not exceeding one hundred pounds, and to a further penalty not exceeding fifty pounds for every day during which the offence is continued after the day on which the first penalty is incurred."

Mr. *Reilly* proposed that clause 48 should be amended as follows: "Whenever any sewage or any other offensive or injurious matter is caused or suffered to flow, or to pass into the Thames, or is caused or suffered to flow or pass into any river, stream, cut, dock, canal, or watercourse communicating with the

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Thames at any point within three miles of the Thames, measured in a direct line therefrom, in such manner that the same is carried, or is likely to be carried, into the Thames, then, and in every such case, the Conservators within a reasonable time after knowledge of the fact, shall, and they are hereby required to give notice in writing under their common seal, to the person causing or suffering the same so to flow or pass, to the effect that they require him to discontinue the flow or passage thereof as aforesaid, within a time to be specified in the notice, not being in any case less than twelve months, or more than three years, provided that the Conservators may, if they think fit, at any time, and from time to time, extend the time specified in the notice, by writing, under their common seal; but nothing in this section shall authorise the Conservators, until the expiration of six months after the passing of this Act, to give to the owner or occupier of any mill or work, a notice requiring him to discontinue the flow or passage as aforesaid, of any liquid matter produced or used in the manufacture of paper, or in any process incidental thereto."

Mr. *Liddell* proposed the following proviso on behalf of Eton College: "Provided always that if any person or persons, upon whom any such notice as aforesaid shall have been served, shall deem himself or themselves aggrieved by reason of the time specified in such notice not being sufficient to enable him or them to discontinue the flow or passage of existing sewage into the River Thames, he or they shall, before the expiration of the time specified in such notice, state in writing to the Clerk of the Conservators, the subject-matter of his or their complaint, and may demand that the said matter, if not remedied, may be referred to arbitration, and the same shall be referred to an arbitrator, to be appointed by the Board of Trade, on the application either of the Conservators, or of the party complaining; and the provisions of "The Railway Clauses Consolidation Act, 1845," with respect to the settlement of disputes by arbitration, shall, so far as they are applicable, apply to every such arbitration."

Mr. *Macnamara* proposed the following clause, which he requested the Committee to take into consideration before deciding on the proviso proposed by Mr. Liddell:—"Notwithstanding anything in this Act, any notice given under the authority of this Act to any Local Board of Health, or corporate or other body, having the charge or control of the drainage or sewerage of any town or district, requiring that board or body to discontinue the flow or passage of sewage, or any other offensive or injurious matter as aforesaid, shall not have any force or effect, unless and until such notice has been confirmed, or allowed by Order of Her Majesty in Council, and for the space of two calendar months after any such notice has been given, the Board or other body to whom that notice has been given, may by petition submit to Her Majesty in Council any objection to or representation in relation to such notice."

Mr. *Phinn* pointed out to Mr. Macnamara, that the proviso proposed by Mr. Liddell contained a reference to arbitration.

Mr. *Macnamara* stated that he would be satisfied with that, and thereupon withdrew his clause, and stated that the only other proposal he had to make was that the minimum should be two years, and the maximum four years.

The *Chairman* stated that the opinion of the Committee was against any further increase of time.

Mr. *Lumley Smith* then proposed the following clause on behalf of the paper-makers: "Where any person shall receive notice under the 48th section of this Act, it shall be lawful for the defendant to refer any dispute or question which shall arise between the Conservators and himself to arbitration in such manner as is provided by 'The Lands Clauses Consolidation Act, 1845,' the case to be set up by the defendant in such arbitration to be confined to the grounds of defence enumerated in the 50th section of this Act, or some or one of them; provided that until the award in any case referred to arbitration as aforesaid shall be pronounced the notice which led to such arbitration shall be of none effect; and should such award be in favour of the Conservators, the time specified in the notice shall be deemed to commence from the date of the award."

Mr. *Phinn* was heard against the clause.

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The *Chairman* stated that the Committee were of opinion that the clause proposed by Mr. Lumley Smith should be rejected.

After some further discussion clause 48, as amended, and also the proviso of Mr. Liddell, subject to some verbal amendments, were agreed to, and the clause was postponed for the purpose of settling the same.

Mr. *Reilly* proposed that clause 49 should be amended, as follows: "Any person to whom any such notice is given by the Conservators shall, notwithstanding anything in any other Act, discontinue the flow or passage of the sewage or other offensive or injurious matter to which the notice refers; and if any person fails to do so, he shall be guilty of a misdemeanour, and shall be liable on summary or other conviction thereof to a penalty not exceeding one hundred pounds, and to a further penalty not exceeding fifty pounds for every day during which the offence is continued after the day on which the first penalty is incurred."

Mr. *Lumley Smith* proposed the following amendment: "Any person to whom any such notice is given by the Conservators shall comply with the requisition of the notice; and if any person fails to do so, he shall be guilty of a misdemeanour, and liable, on summary or other conviction thereof, to a penalty not exceeding one hundred pounds, and to a further penalty not exceeding fifty pounds for every day during which the offence is committed after such conviction."

The *Chairman* stated that the Committee were of opinion that the proposed amendment could not be admitted.

The clause was ultimately agreed to, amended as follows: "Subject to the provisions of this Act, any person to whom any such notice is given by the Conservators shall, notwithstanding anything in any other Act, discontinue the flow or passage of sewage, or other offensive or injurious matter to which the notice refers; and if any person fails to do so, he shall be guilty of a misdemeanour, and shall be liable, on summary conviction thereof before two or more justices, or on conviction thereof on indictment, to a penalty not exceeding one hundred pounds, and to a further penalty not exceeding fifty pounds for every day during which the offence is continued after the day on which the first penalty is incurred."

Mr. *Phinn* proposed that clause 50 should be struck out.

Mr. *Johnson*, on behalf of the papermakers, objected to the omission of clause 50, and proposed that it should stand as follows: "Provided that, in any prosecution for the misdemeanour aforesaid, the defendant shall not be liable to conviction if he shows to the satisfaction of the Court by whom the matter is heard, which Court shall consist of two justices at the least, one of the following things, namely: first, that the act or thing complained of does not injure the water of the Thames; and, secondly, that it is done in the exercise of any right to which the defendant is by law entitled; and, thirdly, that he has used the best practicable means, within a reasonable cost, to render harmless the liquid or solid matter permitted to pass into the water, provided that, in making experiments to effect that object, any legal right possessed by the defendant previous thereto shall remain in full force and effect, should such experiments eventually prove successful; or, fourthly, that it is not reasonably possible for him to discontinue the doing of the act or thing complained of."

Mr. *Phinn* was heard against the clause as proposed by Mr. Johnson.

Mr. *Johnson* was heard in reply,

The *Chairman* stated that the Committee were of opinion that the clause need not be retained.

Clause 51 was then agreed to, with the following addition: "And notwithstanding anything in the same Act (section 162) the Court of Quarter Sessions shall hear and determine with a jury any appeal brought against any adjudication or determination in respect of such a misdemeanour as aforesaid.

Mr. *Reilly* proposed to omit clause 52.

Mr. *Macnamara* proposed that clause 52 should be retained, and, in addition,

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that power should be given to the local authorities, as well as the Conservators, to prosecute.

After some discussion, the clause was agreed to, striking out the words "under this Act," in the third line.

Mr. *Macnamara* then proposed the following clauses: "The Local Board of Health of any town or district situate wholly or in part within three miles of the Thames may, within the district, put in force the provisions of this Act with respect to 'sewage,' and may exercise the powers by this Act conferred upon the Conservators with respect thereto. But this enactment shall not in any way diminish, alter, or lessen the powers of the Conservators under this Act."

"The Local Board of Health for any district situate wholly or in part within three miles of the Thames may at any time hereafter make application to Parliament for powers to purchase, take and hold lands, and carry into effect works and operations for the purpose of utilizing, by irrigation or otherwise, the sewage of their district, and for purposes connected therewith, and the costs and expenses incurred in and about any such application may be charged upon the general district rates levied in the district."

The *Chairman* stated that the Committee were of opinion that the two clauses proposed by Mr. Macnamara should be rejected.

Clause 53, as amended, was read and agreed to.

Mr. *Macnamara* then proposed the following clause:—

"Any Local Board of Health, or corporate or other body, having the charge or control of the drainage or sewerage of any town or district, any part whereof is situate within three miles of the Thames (hereinafter referred to as 'The Local Board'), may purchase, take, and hold lands, whether within or without the limits of their district, for the purpose of utilizing, by irrigation or otherwise, the sewage of their district, and may take the following proceedings for putting in force, with respect to such lands, the powers and provisions of 'The Lands Clauses Consolidation Act, 1845" (that is to say):—

"1. The Local Board may once in each of three consecutive weeks in the month of November, publish, in some newspaper circulated in their district or some part thereof, an advertisement, describing shortly the object for which the land is proposed to be taken, and stating the situation and quantity of land that they require.

"And they may, in the month of December following, serve a notice, in manner hereinafter mentioned, on every owner or reputed owner, lessee or reputed lessee and occupier of such land, defining in each case the particular land intended to be taken, and requiring an answer, stating whether the person so served assents, dissents, or is neuter in respect of taking such land.

"And such notice shall be served by delivery of the same personally on the party required to be served, or, if such party is absent abroad, to his agent; or

"By leaving the same at the usual or last known place of abode of such party as aforesaid; or

"By forwarding the same by post in a registered letter, addressed to the usual or last known place of abode of such party.

"2. Upon compliance with the provisions hereinbefore contained, with respect to advertisements and notices, the Local Board may, if they shall think fit, present a petition to one of Her Majesty's principal Secretaries of State. The petition shall state the land intended to be taken, and the purposes for which it is required, and the names of the owners, lessees, and occupiers of land, who have assented, dissented, or are neuter in respect of the taking of such land, or who have returned no answer to the notice; it shall pray that the Local Board may, with reference to such land, be allowed to put in force the powers of the said "Lands Clauses Consolidation Act," with respect to the purchase and taking of land otherwise than by agreement, and such prayer shall be supported by such evidence as the Secretary of State requires.

"3. Upon

"3. Upon the receipt of such petition, and upon due proof of the proper advertisements having been published and notices served, the Secretary of State shall take such petition into consideration, and may either dismiss the same or direct an inquiry in the district in which the land is situate, or otherwise inquire as to the propriety of assenting to the prayer of such petition; but until such inquiry has been made in the district, after such notice as may be directed by the Secretary of State, no provisional order shall be made affecting any land, without the consent of the owners, lessees, and occupiers thereof.

"4. After the completion of the inquiry as last aforesaid, the Secretary of State may, by provisional order, empower the Local Board to put in force with reference to the land referred to in such order, the powers of the said "Lands Clauses Consolidation Act," with respect to the purchase and taking of land otherwise than by agreement, or any of them, and either absolutely or with such conditions and modifications as he may think fit; and it shall be the duty of the Local Board to serve a copy of any order so made, in the manner and upon the person in which and upon whom notices in respect of such land are hereinbefore required to be served.

"5. No provisional order so made shall be of any validity, unless the same has been confirmed by Act of Parliament, and it shall be lawful for the Secretary of State, as soon as conveniently may be, to obtain such confirmation; and the Act confirming such order shall be deemed to be a public general Act of Parliament.

"6. All costs, charges, and expenses incurred by the said Secretary of State, in relation to any such provisional order as last aforesaid, shall, to such amount as the Commissioners of Her Majesty's Treasury think proper to direct, become a charge upon the general district rates levied in the district to which such order relates, and be repaid to the said Commissioners of Her Majesty's Treasury by annual instalments not exceeding five, together with interest after the yearly rate of five pounds in the hundred, to be computed from the date of any such last-mentioned order upon so much of the principal sum due in respect of the said costs, charges, and expenses as may from time to time remain unpaid."

Mr. *Reilly* was heard against the clause.

Mr. *Macnamara* was heard in reply.

The *Chairman* stated that the Committee were of opinion that the clause should not be inserted.

Mr. *Macnamara* then proposed the following clause:—

"The purchase or consideration money paid for the purchase of such land, and the costs, charges, and expenses of and incident to such purchase, and the construction of works for utilizing, by irrigation or otherwise, the sewage of the district, including the providing of labour, machinery, and other appliances, shall, in the case of any Local Board of Health, be deemed to be expenses incurred in the execution of 'The Public Health Act, 1848,' and shall be charged upon the general district rates levied in the district, and the purchase of such land, and the works so to be constructed as aforesaid, shall be deemed to be permanent works within the meaning and intent of 'The Local Government Act, 1858.'"

Mr. *Wyatt* stated that the notices would not cover that clause.

Mr. *Macnamara* then withdrew the clause.

Mr. *Lopez* proposed the following clause:—

"Notwithstanding anything in this Act contained, it shall be lawful for the owner or occupier of any water-mill to exercise all such rights of fishery, including the right for that purpose of drawing off water pounded or kept up by any adjoining lock, dam, or weir, while water is running over or escaping from such lock, dam, or weir, as he would have been entitled

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to if this Act had not been passed; provided that the maintenance or exercise of such right does not in any manner injuriously affect the stability of such lock, dam, or weir, or be prejudicial to the navigation of the river, or compel the Conservators to incur any greater expense in keeping such lock, dam, or weir in repair than would otherwise be the case."

Mr. *Reilly* stated that he was perfectly willing to put in a proviso at the bottom of page 10 of the Bill, to this effect:—"That nothing in this section shall injuriously affect any right or privilege of any person to fish with nets or bucks in any part of the river."

Mr. *Lopez* stated that he was content with that.

Mr. *Lopez* then proposed the following clause:—

"Notwithstanding any of the powers by this Act vested in the Conservators, it shall not be lawful for them to do any act, or to construct any works, the effect of which will directly or indirectly be to throw back water on the wheel of any water-mill, or otherwise permanently raise the level of the water in any mill-tail."

Mr. *Reilly* objected to the clause.

The *Committee*, after some discussion, decided against the clause.

Clause 54, as amended, was read and agreed to.

Clause 55 was read and agreed to.

Clause 56 was postponed.

Clauses 57, 58, and 59 were severally read and agreed to, as amended.

Clauses 60 and 61 were read and agreed to.

Clause 62 was read.

Mr. *Thomas Pring*, called in; and Examined.

Mr. *T. Pring.*

5443. *Chairman.*] HAVE you any statement to make upon behalf of the bondholders?—The bondholders request me to state that they object to their interests in this being deferred; the proposition they made was, and which they thought very reasonable, that for the small sum of 10 per cent. our large sum of money should be bought up, or the alternative taken, that the property, consisting of pound houses, locks, and land, should be valued at the present time, we, biding the issue, taking what it is worth at the present time.

Cross-examined by Mr. *Reilly*.

5444. How do you propose that that money should be raised to pay you off?—By loan.

5445. On what?—The money that is to be borrowed; we assume that some small portion of that would be judiciously used in buying up this 88,000 *l.*

5446. Do you represent all the bondholders?—We have had meetings; I handed the Chairman a list of the names; it amounted to nearly half the amount; but a great many of the bondholders have ceased to live, and they are in the hands of executors, whom we could not bring forward.

5447. There are trustees, are there not?—Just so.

5448. How do you propose to bind them?—It was suggested at the last Committee meeting that a clause should be inserted in the Act of Parliament to the effect that two-thirds or three-fifths, or some given number, should bind the remainder.

5449. Otherwise, in point of fact, whatever may be done by the Bill, you have not obtained the consent of more than half of the bondholders?—Not more than half, or not quite so much.

5450. When was that consent obtained?—About this time last year; there have been meetings since, confirming it.

5451. Have they confirmed it?—Half the number have.

5452. Some of that moiety of the bondholders have disappeared also, I suppose

suppose, since then; are they all alive?—Oh, no; those whom I have communicated with are willing to do what we propose; take 10 per cent.

5453. Captain *Vivian.*] Did you send circulars round to all the bondholders, giving them notice of this meeting?—Yes.

5454. Did you have answers from them?—To the extent of about half of them.

5455. But you have no answers from the other half?—Because simply they do not exist.

5456. The executors exist?—Many of them have not administered to the wills.

Sir *G. Bowyer.*] They will administer, I suppose, if they thought there would be some chance of getting something.

5457. Mr. *Reilly.*] Are you a solicitor?—No.

5458. Are you a banker?—My business is that of an optician; I have attended here with Mr. Dryland, who drew up the resolutions of the meeting.

5459. As far as you represent the bondholders, your feeling is that they would rather have something in hand than their whole capital paid to them ultimately?—That is what I am requested to state: they would rather take 10 per cent. than trust to future management to have a dividend.

5460. Sir *G. Bowyer.*] How do you propose that they shall get that 10 per cent.?—Out of the loans.

5461. Do you think the loans could be effected on those terms, of paying you 10 per cent. at first?—If it is to be a healthy transaction, I should think the lenders would only be too pleased to buy us up at that rate.

5462. Do you think that would be practicable; do you think they will advance their money upon those terms?—I should think it would be a very good bargain upon their part.

5463. That is your opinion?—Yes, seeing that there is more than sufficient in *bonâ fide* property, such as land and houses.

5464. Which produce nothing, as you tell me?—But that is through bad management.

5465. Mr. *Neate.*] There is some question whether the land that is bought subsequently should be included or not?—Mr. William Blandy tells me that it is a question of price.

5466. How many acres are there?—I could not tell you that, because they are distributed over a large surface; I know that one in our neighbourhood, as Mr. Blandy told me, was purchased for 800 *l.*; we could get that or more for it now; that was purchased previous to giving notice of this Bill.

5467. Mr. *Reilly.*] How is that land used now?—The pound-house keeper appeared to have possession of it; I do not know under what circumstances.

5468. That land to which you refer is the site of one of the pound locks?—The pound lock is on part of the land, but there is a large piece of land in addition to that.

5469. Is it your notion that you could take possession of that pound lock; is that your idea?—We have been advised that we could; but we thought it would be an unwise thing to do, seeing that it must of necessity create litigation.

5470. Were you not advised that if you took possession of it, you would do so subject to the rights of the navigation?—I believe that fact was mentioned as well.

5471. Sir *G. Bowyer.*] Were you so advised?—Yes; we were also advised that we could not individually take the money; that we should have to share it among the entire of the bondholders.

5472. There would be considerable difficulty in distributing that money?—There would.

5473. You must go to the Court of Chancery to do that?—I apprehend we should.

5474. Mr. *Reilly.*] Have you read Mr. Graham's evidence?—Yes, the whole of it; and I was here when he gave it.

5475. Sir *G. Bowyer.*] In fact, the parties holding the money would not be safe in distributing it, except through the medium of the Court of Chancery?—I dare say.

Mr. *T. Pring.*

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5476. Do you not think that a considerable portion of that might find its way into the pockets of the lawyers?—That was our fear; and that is the reason why we did not move in it.

5477. Mr. *Reilly.*] Do you see any reason to differ from Mr. Graham in the opinion he expressed?—On what particular point?

5478. On the bondholder's position?—No; I have no reason to say that Mr. Graham is not correct; but at the same time the bulk of our property was undervalued at the period that Mr. Graham was asked the question about it.

5479. What I asked you was this: do you object to Mr. Graham's statement with regard to the legal position of the bondholders?—No; I have no reason to do so.

Cross-examined by Mr. *Sargood.*

5480. Do I understand you to say that you would be content to be paid 2 *s.* in the pound for your 100 *l.* bonds?—I would.

5481. How many bondholders' opinions do you represent in stating that?—It was something like one-third of the capital in round numbers.

5482. Never mind the capital; how many individuals do you represent in making that proposal?—I have given Mr. Milner Gibson the list of them; I could not tell you now; it might have been 20 or 24.

5483. Some considerable number?—Yes; I brought the list upon the last occasion, containing all the names.

5484. Might I ask, without taking a liberty, how many bonds you hold yourself?—I hold 1,000 *l.* worth.

5485. Ten bonds?—Yes.

5486. Would you be a serious loser by accepting 2 *s.* in the pound?—No; I should lose about half; I bought them at different periods; I bought some as low as 10 *l.* each, but that was 10 years ago.

5487. What did you give for them?—The last I bought were 10*l.* each; what I bought previously was in excess of that.

5488. The lowest you bought was 10*l.*?—Yes; they have been sold at public auction at 10*l.*; at all events, we put it at our meeting at that last sum.

5489. I suppose it is since you heard that the water companies are going to give us 5,000*l.* a year that you bethought yourselves we might buy them all up?—No, our opinion is rather the other way now.

5490. Then you would rather keep them?—No, I do not say that we should like to keep them; but we are not so anxious about it as we were since we heard of the 5,000 *l.*

5491. You rather have a tendency towards keeping them than getting rid of them?—No, our present impression is still that we had better sell and have done with it.

5492. If you keep them you would like us to improve the navigation for you, and give you a first charge; you would like us to carry out the improvement in the navigation and create an income, giving you the first charge on it?—We do not put it quite in that way. If I had a mortgage on your house, there is no reason why I should have anyone else going in and taking a second mortgage on it.

5493. I hope never to see my house in such a state as the Thames; but we are talking of putting it in repair for you?—The bad state of the Thames has been brought about by bad management.

5494. But now you are going to have good management in order to create an income; do I understand you to say now that you ought to have a first charge upon it to pay your interest?—We think our charge ought not to be ignored.

5495. But you would like to become No. 1, and not paid back?—I did not say that.

5496. If you are not satisfied with the Bill, what do you propose?—Our proposition is that for the small sum of 10 per cent. you should buy us up and clear away the difficulty.

5497. Suppose we do not buy you up, you do not propose to alter the Bill as it stands; but you prefer that we should buy you up?—I do not know what those propositions are; all we are anxious for is that we should not be ignored, and that some cognisance of us should be taken.

5498. That you should be put in such a place as the Committee think fit?— Quite so. Mr. *T. Pring.*

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Some short discussion then took place upon the clause, which was ultimately agreed to as follows: "The mortgage or bond debt contracted by the Upper Navigation Commissioners, and now remaining unpaid (not exceeding the sum of eighty-eight thousand four hundred pounds), with interest from the passing of this Act, at the rate of three pounds ten shillings per centum per annum, shall be a charge on the tolls and charges leviable under this Act, subject to and after any charge thereon for the time being created by the Conservators under this Act."

Clauses 63 and 64 were then read, and agreed to.

Clause 65 was then read and agreed to, as amended.

Clauses 66, 67, 68, 68A, 69, and 70, were then read and agreed to.

Clause 71 was struck out.

Clause 71A was then agreed to, amended as follows: "The Conservators shall apply to Parliament, as soon as the usage and practice of Parliament will permit, for an Act containing such provisions in relation to the Thames between Staines and the western boundary of the district, under the authority of the Metropolitan Board of Works, as are not already in force in relation to that part of the Thames, and as are contained in this Act in relation to the Thames between Cricklade and Staines, or such other provisions as will enable them efficiently to preserve and purify the water of the Thames."

Clause 72, as amended, was then read, and agreed to.

The postponed clauses were then proceeded with.

Clauses 3, 4, 5, 5A, 6, and 7, as amended, were severally read, and agreed to.

Clauses 8, 9, 10, 11, 12, and 13 were severally read, and agreed to.

Clause 14, as amended, was read, and agreed to.

Clauses 15, 16, 17, and 18 were severally read, and agreed to.

Clause 19, as amended, was read, and agreed to.

Clauses 20, 21, 22, and 23 were severally read, and agreed to.

Clauses 31, 32, and 33 were read, and agreed to.

Clause 33, upon the suggestion of Mr. Clerk, was amended, and agreed to, as follows:—"All works which the Upper Navigation Commissioners, or any of them, are at the passing of this Act authorised or bound to execute and complete, and which are not then executed and completed, may be executed or completed by the Conservators; and for that purpose the Conservators shall have all the powers and rights which were conferred on the Commissioners, and which, but for the passing of this Act, might have been exercised by the Commissioners."

Clauses 34 and 35 were then read, and agreed to.

Clause 36, as amended, was read, and agreed to.

Clauses 37, 38, and 39 were then read, and agreed to.

Wednesday, 4th July 1866.

MEMBERS PRESENT:

Mr. Acland.	Mr. Neate.
Sir Michael Hicks Beach.	Mr. A. W. Peel.
Sir George Bowyer.	Colonel Napier Sturt.
Lord Eustace Cecil.	Captain Vivian.
Mr. Milner Gibson.	

THE RIGHT HON. THOMAS MILNER GIBSON, IN THE CHAIR.

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The Committee proceeded with the further consideration of the Clauses.

Mr. *Reilly* stated, that the following clause had been agreed upon between the Promoters and Mr. Danbe, and would be 46E.: "Provided always, That the Conservators shall make compensation for any tolls or payments to or in which Robert Danbe, of The Weirs, near the City of Oxford, publican, is entitled or interested, and which are abolished by this Act, according to the value thereof, as they stood before the notice given for this Act, and the amount of and title to such compensation and the form thereof (whether by annual payment or by a gross sum, or partly in one way and partly in the other), shall be determined by an arbitrator appointed by the Board of Trade, on the application of the said Robert Danbe or his representatives or assigns, made within three months after the passing of this Act; and the amount thereof shall, notwithstanding anything in this Act, be charged on, or paid out of, the tolls and charges leviable by the Conservators under this Act, in priority to all other charges and payments on or out of the same, except the expenses of the repair and maintenance of the works vested in the Conservators by this Act, and the interest on any mortgage debt contracted by the Conservators for such repair and maintenance; and, notwithstanding anything in this Act, the Conservators may, if they think fit, redeem such compensation (if in the form of an annual payment) on such terms as the Conservators and the said Robert Danbe, his representatives or assigns, agree on; and for that purpose the Conservators may apply any funds coming to them under this Act."

Mr. *Liddell*, on behalf of Eton College, proposed the insertion of the following proviso after Clause 40: "Provided always that none of the provisions contained in section 93 of "The Thames Conservancy Act, 1857," shall extend to any of the lands belonging to Eton College, situated within a distance of one mile from the chapel of the said College, except by the consent of the Provost and College."

Stephen William Leach, Esq., re-called; Examined by the *Committee*.

S. W. Leach, Esq.

5499. Mr. *Acland*.] ARE you able to tell us what acts have been done under the 93rd clause of "The Thames Conservancy Act, 1857"?—The only case that I know

know of a bank being cut was at Rotherhithe, where there was a dilapidated bank, and we had to do that in order to give a better frontage to the river. An arrangement was made between the Conservators and the owner of the wharf, by which the bank was cut and set back.

5500. Mr. *Neate.*] Thrown back.

5501. *Chairman.*] But that power was not sufficient for you to go back on the land of the owner of the wharf; you were obliged to do what you did by an arrangement with him?—By an arrangement with him.

5502. Sir *G. Bowyer.*] You could not go beyond the bank?—No.

5503. Captain *Vivian.*] Do you not apprehend that the clause does give you power to cut down the bank as much as you like?—No, I think not.

5504. *Chairman.*] Do you think it necessary for such a power to be vested in those who are to have the responsibility of attending to the course of this river?—I do; as Mr. Phinn has said, and I know it from my own knowledge, portions of the bank are in a most dilapidated state, it is being washed into the river, and is damaging the river, and it will be quite necessary that the banks should be repaired.

5505. Mr. *Peel.*] When you speak of actually cutting the banks, how many years ago are you speaking of?—That must have been six or seven years ago.

5506. For how long a time does your knowledge extend back?—My knowledge extends to upwards of 20 years back.

5507. That is the only case in 20 years that you know of?—Yes.

5508. Mr. *Neate.*] That was before the Act of 1864?—Yes, it was under the Act of 1857, but the same power is given by the Act of 1864.

5509. Mr. *Acland.*] You wish to have the power to share and support, and deal with the bank generally?—Yes, that is quite necessary.

5510. Is it not conceivable that in doing that, you may put up works on which there may be a difference of opinion respecting those things; is it unreasonable that there should be some consent to what you do, or should you, as engineer, feel impeded by having to obtain the consent of the parties on the spot, as to the nature of those works?—No; I do not think that any such consent is necessary.

The *Chairman* stated that the Committee were of opinion that the proviso proposed by Mr. Liddell should not be inserted in the Bill.

Clause 40 was then read.

Mr. *Toulmin Smith* proposed that the clause should be amended, by inserting after the word "four" in line 13, "or one hundred and sixty-six."

Stephen William Leach, Esq., re-called; and Examined by the *Committee.*

5511. Sir *G. Bowyer.*] A GREAT deal has been said to persuade the owners of lands on the River Thames that the extension of this Lower Navigation, added to the Upper Navigation, would probably involve them in very great expense; is that so?—Several cases have occurred under that clause of the Act; where the Conservators have called on parties to repair their wharves or banks in every single case they have done so, but they have not been called on to make those repairs in any extravagant form, or in a way to which they could object.

5512. In the first instance, the Conservators would not require anybody in an agricultural district to build a wall?—No; only sufficient to prevent the bank from sinking into the river.

5513. Mr. *Reilly.*] You would merely require them to put a pile in?—Something of that kind; no question has ever arisen at all as to any unreasonable demand.

Clause 40, as amended, was then agreed to.

Clause 41 was then read, and agreed to.

Clause 48 was then read, and agreed to.

Mr. *Wyatt* then proposed clause 48A, as follows: "Provided always that any person to whom any such notice is given thinks himself aggrieved by

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reason of the time allowed, either by the original or by any subsequent notice, not being sufficient to enable him to discontinue the flow or passage of the sewage, or other offensive or injurious matter to which the notice refers, he may, before the expiration of the time so allowed, by writing, delivered to the Secretary of the Conservators, demand an extension of such time; and in case the Conservators refuse to comply with such demand, the matter shall be referred to an arbitrator appointed by agreement, or, failing agreement, by the Board of Trade, on the application of either party; and the decision of the arbitrator shall be final; and the costs of the reference shall be in the discretion of the arbitrator."

Upon the suggestion of Mr. Sargood, the following words were inserted after the word "may," in line 6, "not later than one month."

The clause, as then amended, was agreed to.

Clause 56 was read, and agreed to, amended as follows: "The Conservators may borrow from the Public Works Loan Commissioners, and those Commissioners may lend to them, such sum of money as the Public Works Loan Commissioners think fit for the purposes of this Act."

Mr. *Reilly* proposed the insertion of the following clause, as agreed to by the Promoters, and the millers: "Nothing in this Act contained shall prevent the owner or occupier of any water mill from exercising all such rights of fishery, including the right for that purpose of drawing off water pounded or kept up by any adjoining lock, dam, or tumbling bay, while and during such time as water is running over such dam, weir, or tumbling bay, as he would have been entitled to if this Act had not been passed; provided that the maintenance or exercise of such right does not in any manner injuriously affect the stability of such lock, dam, or weir, or be prejudicial to the navigation of the river, or compel the Conservators to incur any greater expense in keeping such lock, dam, or weir in repair than would otherwise be the case."

Mr. *Sargood* objected to the clause, on the part of the Conservators.

Mr. *Ellison*, on the part of the millers, was heard in support of the clause.

Colonel *Thomas Peers Williams*, a Member of the House; Examined.

Colonel *T. P. Williams*, M.P.

5514. *Chairman.*] I BELIEVE you wish to make some statement about the taking of eels?—With reference to the taking of eels, it is very obvious that, as far as that is concerned, while the water is running over the tumbling bay or weir, which at high water it is constantly doing, notwithstanding that the bucks are drawn, it cannot by possibility affect the navigation; nay, I will go further, and say that you may lower the water one foot below the sill of the tumbling bay, and not in the slightest degree affect the navigation; I am putting the minimum; in fact, I should say 18 or 20 inches, without in the slightest degree affecting the navigation, but I will put it at one foot.

5515. Mr. *Ellison.*] May I ask you, as a matter of fact, do the iron gratings catch any other fish than eels?—Certainly not, as far as I have known.

5516. Colonel *Napier Sturt.*] They catch everything that goes down, do they not?—I have known roach, dace, and such fish as that, caught.

5517. Sir *G. Bowyer.*] Supposing a trout goes down there, would not that be caught?—We should like to see a trout there.

5518. *Chairman.*] Supposing this is not very carefully looked after, would there not, in the course of a long night, be a probability of so much water running through that, without your being aware of it, the water would cease to run over the weir?—Generally not.

5519. But would it sometimes occur?—It might; but I am not aware that it ever has occurred.

5520. The Commissioners report that although you are prevented from letting the water run down, by the Act of George 3, nevertheless, in the exercise of these

Colonel *T. P. Williams*, M.P.

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these fishery rights they added to the grievous interruption of the navigation?—I am not competent to give an opinion as to what may occur in other parts of the river; but in the immediate neighbourhood of the district which I belong to I have certainly never known it to occur. I have known the water drawn down very low for fishing, but not low enough to stop barges passing. It never happened. I never heard any complaint of the water being lowered in the reach that I belong to, except on one occasion; that was an occasion of a miller having applied to me to lower the water for the purpose of effecting some essential repairs to his mills, and on that occasion a barge went aground, and the people grumbled. That occurred last year. That is the only occasion that I recollect.

5521. Colonel *Napier Sturt.*] You would not object to seeing the matters connected with fishing left in the hands of the Conservators, to act according to their discretion?—It depends so much on the powers that are vested in the hands of the Conservators.

5522. Mr. *Clerk.*] Perhaps, Colonel Williams, you will allow me to put this to you as we have the power of making bye-laws, that very question of the mode of catching eels, and the time at which the bucks might be left open, would be a matter which could be represented at the making of the bye-laws; we have a provision with regard to proper control, so as to secure the navigation, and the question with regard to those bucks being there will be attended to; under the Act of 1864, we have the power to make bye-laws for regulating the fishing; if you made a representation on that subject to the Conservators, with the power of making a representation to the Board of Trade, do you not think you will get sufficient bye-laws to regulate your fishery consistently with the interests of the navigation?—That would depend upon the option of the Conservators.

5523. You have the power of representing that your interests are not sufficiently attended to?—To the Conservators.

5524. Perhaps you are not aware how these bye-laws are to be made, but the Committee know that with regard to the bye-laws, you would have the power of representing that your interests were not sufficiently attended to, and in that way you would get an opportunity of having your fishing interests looked after, and the Conservators would also attend to the interests of the navigation?—Then I understand the right of fishery remains as it is now?

5525. Entirely; the right of fishing remains untouched, except that point of drawing down the water, with regard to which the Conservators, under their powers, would be able to make bye-laws if the drawing down of the water did not draw down the navigation?—I did not understand that before.

The *Chairman* stated that the Committee were of opinion that this special provision should not be inserted.

Mr. *Wyatt* proposed the following clause to be inserted after clause 42: "Provided also, that if any person having or claiming any estate in any such lock, dam, or weir within three months after the passing of this Act, gives notice in writing to the Conservators that he claims compensation in respect of the vesting in them of such lock, dam, or weir, then, in case the parties differ, it shall be referred to an arbitrator appointed by agreement, or in default of agreement by the Board of Trade, on the application of either party, to determine the amount of and title to such compensation; and in assessing the amount of such compensation, if any, the arbitrator shall have regard to the state of repair of such lock, dam, or weir, and to the period likely to elapse before any further outlay thereon for permanent repairs will be requisite; and the arbitrator shall determine in what manner and on or out of what fund or property the compensation, if any, shall be charged or paid, and the decision of the arbitrator shall be final, and the costs of the arbitration shall be in his discretion."

The clause was agreed to, substituting the word "six" for the word "three" in the second line.

Clauses 42B, 42D, and 42E, were then read and agreed to.

Mr. *Reilly* proposed the following addition to clause 45:—"Provided always,

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always, that the Conservators shall not by or under any such agreement or arrangement make or give any undue or unreasonable preference or advantage to, or in favour of any particular person, or any particular description of traffic in any respect whatsoever, or subject any particular person or any particular description of traffic to any undue or unreasonable prejudice or disadvantage in any respect whatsoever. If any person liable to pay any tolls or charges thinks himself aggrieved by any such agreement, or arrangement, or by anything done in pursuance thereof, he may apply to the Board of Trade, and the Conservators shall follow the directions of the Board of Trade in the matter."

Mr. *Liddell* proposed the insertion of the following words after the work "not," in the first line, "in the fixing of such tolls or charges."

After some discussion, the Committee decided against the addition proposed by Mr. Liddell, and agreed to the clause as proposed by Mr. Reilly.

Clause 46E was then read, and agreed to.

Mr. *Walters* stated that he appeared on behalf of Captain Phillimore, who was the Commander of Her Majesty's ship "Defence," and it was only on Saturday night that he became aware that his tolls would be taken away from him without compensation, and a petition had been prepared, but in consequence of the adjournment of the House there had been no opportunity for presenting it, and he now asked that compensation might be made to Captain Phillimore, who is the owner of tolls at Shipway.

The Committee decided that Mr. Walters was too late in his appearance before this Committee.

Mr. *Walters* wished it to be understood that he was not prejudiced in any way with regard to the House of Lords.

Mr. *Wyatt* undertook to take no objection of that kind with reference to Captain Phillimore, on behalf of the Promoters.

Clause 67A was then read, and agreed to.

Clause 67B was read, as follows: "If any officer of the Upper Navigation Commissioners is not retained and employed in an office of equal value by the Conservators, he shall be entitled to compensation for his loss of emolument, the form and amount thereof, and the fund on which the same is to be charged, to be determined by the Commissioners of Her Majesty's Treasury, regard being had to the mode of such officer's appointment to his office, and to the tenure thereof, and to the nature of the emoluments thereof, and to the pecuniary position and prospects of the Upper Navigation Commissioners at the passing of this Act."

Mr. *Neate* read the following Memorial:

"SELECT COMMITTEE of the House of Commons, 1866.

"THAMES NAVIGATION BILL.

"To the Right Honourable the Chairman, and the Right Honourable and Honourable Members of the Select Committee, 1866.

"Right Honourable and Honourable Sirs,

"As the evidence on this Bill is now nearly completed, I beg to be allowed the privilege of laying the following statements before your Committee in reference to my petition, and the clause in the petition of the Thames Navigation Commissioners, which applies to me as one of their officers.

"I beg to state that I have abstained from occupying time by submitting evidence in support of my petition, partly on the ground that, while your inquiry was proceeding, I considered that it was my duty to appear before your Committee as a witness free to give information, and not as an advocate in support of my personal considerations.

"But

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"But, at this stage of your proceedings, I trust that I may with propriety refer to my own interests.

"I beg, therefore, to remind your Committee that this Bill deprives me of the position which I hold under the 11 Geo. 3, c. 45, s. 6, as General Surveyor, Receiver, &c., to the Thames Navigation Commissioners.

"That position I should have continued to hold provided the said Commissioners had been entrusted by Parliament with power to raise funds, and also provided that certain clauses in the Thames Navigation Acts were not repealed by this Bill.

"That on the ground of fitness, and as a 'good officer,' I was entitled to continue to hold that position may be inferred from that portion of the petition of the aforesaid Commissioners which applies to their officials.

"And I beg to refer your Committee to the evidence given by Mr. Rawlinson, in reply to Questions 2900 to 2905 (page 174, on the Minutes of Evidence taken before your Committee), for further proof of my fitness and ability.

"And further, also, if it is necessary, I can have the honour of submitting to your Committee corroborative evidence of other civil engineers of the highest standing.

I feel confident they would prove that I am fully entitled to compensation, even upon the terms stated by Mr. Phinn in his opening address (page 26, on the Minutes of Evidence taken before your Committee).

Allow me, therefore, humbly to beg that the prayer of my petition may be granted.

"And that your Committee will conclude that the public interests will not suffer if I am permitted to retain under this Bill a similar Parliamentary right to that which I now hold and enjoy.

"Or, in lieu of such Parliamentary right, that your Committee will grant me other compensation.

"I have, &c.
"*James Castle*,
"General Surveyor, &c. of the Upper Thames."

"Oxford, 2 July 1866."

And proposed the omission of these words from the clause, "And to the pecuniary position and prospects of the Upper Navigation Commissioners at the passing of this Act."

The clause was ultimately agreed to, as follows: "If any officer of the Upper Navigation Commissioners is not retained and employed in an office of equal value by the Conservators, he shall be entitled to compensation for his loss of emolument, the form and amount thereof, and the fund on which the same is to be charged, to be determined by the Commissioners of Her Majesty's Treasury."

The Chairman was directed to report the Bill, with its Amendments, to the House.

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TO THE

MINUTES OF EVIDENCE

TAKEN BEFORE THE

SELECT COMMITTEE

ON THE

THAMES NAVIGATION BILL.

Ordered, by The House of Commons, *to be Printed,*
5 *July* 1866.

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Inability of witness to make any statement of the probable cost of the works under the Bill before the Committee, 983–986——Limited amount of the liabilities of the Commissioners, irrespectively of their mortgage debt, 987–998——Difficulty of raising sufficient receipts from the navigation, and from the parties benefited by improved works, in order to render the outlay under the Bill self-supporting, 999–1007.

Demand by any persons, who may be asked to contribute, to be represented in the management, 1005——Objection to the proposed constitution of the new Board, as not comprising any proper representation of the landowners and others in the upper districts, 1008–1013——Question considered as to the sufficiency of a Board of eighteen members for the management of the river, 1014–1018——Different duties of the present Conservancy Board for the lower navigation from those of the Navigation Commissioners for the upper navigation, 1019–1021.

Further statement as to the very little repairs now done on account of the limited receipts from tolls, 1022–1028——Between Oxford and Lechlade the navigation will not in any case be a paying scheme, 1029–1031——Temporary safety to be procured by an outlay of 2,000 *l.*; 1035–1037——The estimate of from 30,000 *l.* to 50,000 *l.* for putting the navigation in order does not include several works contemplated by the Bill, 1038–1042——Absence of provision in the Bill in regard to purification works, 1042–1047.

Numerous mills not only on the Thames, but within a few miles of it, which will be affected by the Bill, 1048–1061——Large value of some of the mills, 1057. 1059——Propriety of compensation to the millers if their business be destroyed, 1062–1064——Expediency of the millowners being adequately represented in the management of the river, 1065–1068. 1075–1080. 1170, 1171——Destruction of fish by the refuse from paper mills, further adverted to, 1069–1074——Want of a general survey of the river in order to devise a scheme of works in the interests jointly of the millowners, the navigation, and the drainage, 1081–1103.

Distinction to be drawn between the right of the millers to the use of the water and their right or claim to foul the stream by pouring their refuse in, 1104–1114——Dissent from the view that the navigation between Newbridge and Lechlade is so unimportant that it need not be kept up, 1115–1119. 1179——Improvements effected by the landowners as regards drainage since the Report of Mr. Pusey's Committee in 1853; 1120–1122——Large representations of the landowners on the present Commission, 1123–1126——Further argument that the upper districts should be more fully represented than is proposed by the Bill, 1127–1138. 1154–1158——Protection to the upper districts by a right to oppose the passing of bye laws, 1137. 1138.

Belief that all the interests on the river may be advantageously combined, and may be served by a proper scheme of works; reference more especially to the interest of the land apart from that of the mills and navigation, 1139–1153——Suggestion that each town or the river where there is a Local Board of Health, should send one representative to the new Commission, 1154, 1155——The landowners also should send one or more representatives, 1155, 1156——Approval on the whole of one Board rather than of separate Boards for the upper and lower districts, 1158——Question considered as to the landowners in the upper districts being charged with the cost of local improvements carried out by the General Board, 1159–1169.

The cost of a general survey would be probably 1,000 *l.*, and is essential in order to arrive at a correct estimate of the outlay necessary, 1172–1174——Limited amount of navigation works contemplated to be kept up in the upper parts of the river above Oxford, 1175–1196——Expediency of maintaining some weirs above Oxford for storing the water, and as a check upon floods, 1180. 1192–1196——Flooding of the lands at various points along the river where there are tributaries, 1188–1192.

Evidence, 1866—*continued.*

Castle, James. (Analysis of his Evidence)—*continued.*

[Third Examination.]—Distance of several miles between the source of the water companies' supply at Teddington and the nearest paper mills above Staines, 5074–5080 ——Information as to the course pursued in regard to letting the locks on the upper navigation, and as to none having been let during the last two years, 5081–5087.

Castle, Mr. Very efficient services rendered to the Navigation Commission by their surveyor; suggested retention of this officer under the conservators, *Rawlinson* 2900–2905.

Memorial of Mr. Castle to the Committee, dated 2nd July 1866, submitting his claim to compensation in respect of the office of general surveyor, receiver, &c., to the Thames Navigation Commissioners, *pp.* 364, 365.

Clause adopted by the Committee providing for compensation for loss of office by any officer of the Upper Navigation Commissioners, the form and amount of such compensation to be determined by the Treasury, *p.* 355.

Cesspools. Statement as to the very prejudicial effects generally of the use of cesspools in towns; instance at Brighton, *Rawlinson* 2658. 2667–2672.—— *See* also *Sewage, &c.*

Charwell, The. Considerable pollution of the Charwell, one of the tributaries of the Thames, *Castle* 557.

Chelsea Waterworks Company. Petition by the company against the Bill, *p.* 2.

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Cherry, George Charles. Petition by him against the Bill, *p.* 1.

Chertsey Mill. Reference to a certain mill at Chertsey as the only one on the river or close to it below Staines, *Leach* 1977–1983——Beneficial effect in the case of Chertsey Mill of the improvements effected by the conservators in the upper part of the river, *Thorp* 4648.

Cholera. Great importance of pure water with reference to the spread of cholera; illustration of this in 1854, *Rawlinson* 2706. 2732. 2743.

Coal Traffic. Grounds for anticipating a considerable coal traffic on the upper navigation if the works be put in proper order, *Castle* 606–644. 879 *et seq.*——Question considered as to the prospect of an increased conveyance of coal to Oxford by both the Great Western and North Western Railways and a decreased conveyance by the canal and river, *ib.* 881–904——Steps being taken by the Great Western Railway Company for supplying coal to Abingdon, *ib.* 905–910——Preference of coal merchants for water carriage of coals rather than land carriage, *ib.* 910. 919, 920——Prospect of railway supply of coals to Wallingford, *ib.* 911–918——Very little coal now conveyed on the river below Pangbourne, *ib.* 921——Supply of coal at Lechlade from the Severn districts, so that an improvement of the navigation above Oxford would not lead to the supply coming instead from Oxford, *ib.* 922–924.

Commission on Pollution of Rivers. Witness, as member of the commission for inquiring into the pollution of rivers, has inspected the Thames from Cricklade downwards; fully concurs in the report made by the commission relative to the state of the river, *Rawlinson* 2560–2563——Witness concurs generally in the evidence of Mr. Rawlinson as well as in the report of the commission relative to the Thames, *Way* 3164. 3200.

Commissioners (*Upper Navigation.*) See *Upper Navigation Commissioners.*

Compensation (*Lockowners, &c.*) Clause adopted upon the question of compensation in respect of locks, dams, or weirs, vested in the conservators, *p.* 363.

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Conservancy Board:

1. *Evidence in favour of placing the Upper Districts of the River under the Management of the Board.*
2. *Question as to a Representation of Local Interests at the Board.*
3. *Claim of the Metropolitan Board of Works to be represented.*
4. *Claim to a Representation of the Water Companies.*
5. *Considerations as to the Number of Members to be comprised in the New Board.*
6. *Other Evidence relative to the present and proposed Constitution of the Board.*
7. *Sundry details generally.*
8. *Conclusions of the Committee relative to the Constitution of the Board.*

Evidence, 1866—*continued.*

CONSERVANCY BOARD—continued.

1. *Evidence in favour of placing the Upper Districts on the River under the Management of the Board:*

The interests of the Commissioners and of the Thames Conservators are not at all opposed, *Graham* 347——Large powers proposed to be given to the New Conservancy Board over the upper navigation, *ib.* 348–351——Expediency of the proposed Board having the entire control of the whole of the upper districts, *Castle* 541——Different duties of the present Conservancy Board for the lower navigation from those of the Navigation Commissioners for the upper navigation, *ib.* 1019–1021——Approval, on the whole, of one Board rather than of separate Boards for the upper and lower districts, *ib.* 1158.

Facility of an efficient supervision and management of the river in the upper districts by the present Conservancy Board with an increase of three members representing those districts, *Leach* 1309–1315——Collision of interests by leaving any part of the river under local control, *ib.* 1964——Practical experience of the Conservancy Board in matters similar to those embraced in the management of the upper districts, *ib.* 1965–1969.

Conclusion as to its being essential to have but one management of the river above and below Oxford, *Rawlinson* 2753–2760——Necessity of one jurisdiction and one system of management over the upper and lower Thames in order effectually to prevent pollution, *ib.* 2990–3001.

Similar duties devolving upon the Board between Teddington and Staines as upon the Navigation Commissioners above Staines, *Burstal* 4187–4190——Willingness of the Board to undertake the duties of the navigation above Staines on fair terms, *ib.* 4191, 4192——Facility with which the Board, as at present constituted, could undertake the duties of the upper navigation, *ib.* 4295–4301. 4324–4332——Similar duties devolving on the conservators up to Staines as would be required for the upper district, *Thorp* 4645–4650.

2. *Question as to a Representation of Local Interests at the Board:*

As regards the constitution of the body for managing the Thames there should be a proper representation of local interests above Staines, *Graham* 324–334——The Commissioners have suggested that the five districts under them should send ten members to the proposed new Board, *ib.* 335–338——Approval of a Board comprising eighteen members, six to be nominated by the present Conservancy Board, six by Oxford, Reading, and other places on the upper Thames, and six by the landowners, millowners, &c., *ib.* 375——Evidence in favour of the millowners being directly represented at the new Board, *ib.* 375. 386–397. 426–458.

Further statement that the Board proposed by the present Bill is objectionable, as not containing a representation of local interests upon the upper navigation, *Graham* 386–397. 426 *et seq.*——Probability of the millowners' interests not being represented by the three members proposed to be elected from the upper districts, *ib.* 408–416——Considerations as to the constituency for electing the representatives of the upper districts, *ib.* 459–465. 468–470.

Objection to the proposed constitution of the new Board, as not comprising any proper representation of the landowners and others in the upper districts, *Castle* 1008–1013——Expediency of the millowners being adequately represented in the management of the river, *ib.* 1065–1068. 1075–1080. 1170, 1171——Further argument that the upper districts should be more fully represented than is proposed by the Bill, *ib.* 1127–1138. 1154–1158.

With regard to the protection of the upper interests by the system of passing bye-laws, and of keeping separate accounts, it is nevertheless reasonable that the upper part of the river should be represented by Commissioners at the Board, *Leach* 1970–1976——Explanation with regard to a recommendation by witness that the Conservancy Board should be increased by representatives of the local interests of the upper Thames, to be elected by the Thames Commissioners, *Rawlinson* 3132–3136——Approval of an adequate number of representatives of the local interests of the upper Thames being added to the Conservancy Board, *Way* 3205–3209.

Feeling throughout the upper district that it should be represented as fully as the lower district at the new Board, whereas the proposed addition of three conservators for the upper district would be no representation at all, *Rogers* 3373–3402——Apprehended unfair dealing with the interests of the upper district if not represented at the Board, *ib.* 3388–3397——Approval of one Board for the upper and lower navigation provided the upper districts are as fully represented as the lower districts, *ib.* 3659–3668, 3727–3735. 3741–3745——Feeling in all the towns that they should be fairly represented, *ib.* 3745——Approval of a representation of the towns and other interests on the upper Thames, *Sir J. Thwaites* 3899–3903.

Fairness

Evidence, 1866—*continued.*

CONSERVANCY BOARD—continued.

2. *Question as to a Representation of Local Interests at the Board*—continued.

Fairness of the principle that those who have property on the river, and who contribute to the tolls, should have a voice in the representation; question hereon, whether Oxford and other towns on the upper navigation should be represented, *Burstal* 4390-4411——Numerous mills on the upper navigation; witness is not prepared to say whether these should be represented, *ib.* 4413-4429——Approval of a representation of the upper district at the new Board of Conservation; that is, if any addition be made to the Board at all, *Sir F. Nicholson* 4510. 4517. 4531-4537. 4597-4599——Approval of a limited representation of the upper districts, if placed under the conservators, *Thorp* 4656-4658. 4691, 4692.

Want of a representation of the millowners at the new Conservancy Board, *Witherington*, 5364-5369——Important interest of the millowners so that they should be adequately represented in the management of the river, *Rogers* 5736, 5737.

3. *Claim of the Metropolitan Board of Works to be represented:*

Evidence in detail in support of the claim of the Metropolitan Board to be represented on the Conservancy Board, *Sir J. Thwaites* 3779 *et seq.*; *Bazalgette* 3978 *et seq.*; *Tite* 4107 *et seq.*

Evidence opposed to any representation of the Metropolitan Board in the new Board for the management of the river, *Burstal* 4244-4256. 4349-4388. 4764-4767; *Sir F. Nicholson* 4489 *et seq.*; *Thorp* 4643, 4644. 4659-4664.

4. *Claim to a Representation of the Water Companies:*

Statement as to the water companies having a claim to be represented, as they are to pay 5,000 *l.* a year in addition to their present payment, *Tite* 4121, 4122. 4131.

5. *Considerations as to the Number of Members to be comprised in the New Board:*

Objection to a Board of thirty members as being too large to be manageable, *Graham* 339-346——Sufficiency of a Board of eighteen members for the management of the river, *ib.* 398-402——Question considered as to the sufficiency of a Board of eighteen members for the management of the river, *Castle* 1014-1018.

Sufficiency of the present number of members for discharging the duties of both the upper and lower navigation, *Burstal* 4242, 4243——When there were only twelve members instead of eighteen the work was got through just as well, *ib.* 4242. 4325——A Board of twenty-four members could manage the whole river without difficulty; that is, if any increase of the present Board be necessary at all, *ib.* 4302-4312. 4324-4332. 4389. 4430, 4431——Opinion that eighteen members are enough to do all the work, *ib.* 4430.

Entire sufficiency of a board of eighteen members for managing the upper and lower navigation; witness, in fact, would rather reduce than increase the present number, *Sir F. Nicholson* 4517-4530. 4617-4627——The more numerous the Board is the worse is the work done, *ib.* 4517.

The business of the Board, if extended to the upper navigation of the river, would not be any better done by increasing the present number of conservators, *Thorp* 4638-4650——Sufficiency of the former number of twelve members for the efficient discharge of the duties of the Board, *ib.* 4638. 4651-4655——Disapproval of increasing the Board more than is absolutely necessary, *ib.* 4658.

6. *Other Evidence relative to the present and proposed Constitution of the Board:*

Present constitution of the Board of Conservators; addition in 1864 of six members for representing the special interests of the lower navigation, *Graham* 352-358——Disapproval of the suggested election of three members of the Thames Navigation on the Board, *ib.* 370-374——Probable demand by any persons who may be asked to contribute to be represented in the management, *Castle* 1005——Too much importance is given to London by the proposed representation, *ib.* 1013.

Expediency of a control of the wharfingers, shipowners, and bargemen, instead of which they are represented in the controlling body of the river, *Sir J. Thwaites* 3788. 3806. 3839-3848——Inadequacy of the present constitution of the Conservancy Board, as not representing the metropolis, *ib.* 3834-3836——Impression that, under the present constitution of the Conservancy Board, private interests are too much considered, *ib.* 3904-3908.

Information relative to the present constitution of the Board, and the mode of election; total of eighteen members, *Burstal* 4211-4234——Question considered as to the expediency of the increase in the Board in 1864, by the addition of six members representing the river

Evidence, 1866—*continued.*

Conservancy Board—continued.

6. *Other Evidence relative to the present and proposed Constitution, &c.*—continued.

river steamboats, the wharfingers and bargeowners, the shipping interests, &c., *Burstal* 4271–4294——Claim to a representation of the shipowners, river steamers, &c., in respect of the navigation and conservancy of the Thames, *Sir F. Nicholson* 4572–4577. 4628–4630.

Conclusion as to its not being necessary that the watermen and lightermen should send two representations to the Conservancy Board, *Thorp* 4665–4677. 4739–4742——Opinion as to there being no necessity for the representation of the river steamers, *ib.* 4678–4685——Witness has no disposition, however, to interfere with the present constitution of the Board, *ib.* 4693——Objection to any increased representation of commercial interests; question rather whether this representation should not be reduced, *ib.* 4708–4710. 4724–4726. 4739–4749——Extent to which the several interests represented on the present Board contribute towards the expenses of the river, *ib.* 4758–4763.

Arrangement in 1857 under which the Corporation of London are largely represented on the Conservancy Board, they having previously had the river under their own care, *Burstal*, 4183–4186——Approval generally of the present representation of the Corporation and of the commercial interests on the river or its banks; unwillingness, however, of witness to go into the question of the constitution of the Board of which he is secretary, *ib.* 4333–4348——Explanation that witness and the other members appointed by the Corporation consider themselves as trustees for the public; objection to any diminution of this number, *Thorp* 4686. 4696–4702, 4703–4710. 4724–4738. 4750–4757.

7. *Sundry details generally:*

Commencement of the jurisdiction of the conservators of the Thames at Staines, *Graham* 8——Good attendance of the members at the meetings of the Board, *Leach* 1908–1912. 1974, 1975——Jurisdiction of the conservators over the bed of the river, the Metropolitan Board having jurisdiction down to low water, *Sir J. Thwaites* 3928–3931——Approval of some increase of allowance for attendance if the number of the conservators be increased, *Tite* 4121. 4127, 4128.

Harmonious working of the Conservancy Board since its re-constitution in 1864, *Burstal* 4180–4182. 4240–4242——Several sources of the funds of the Conservancy Board, the receipts and expenses being about equal, *ib.* 4193–4208——Total of about 12,000 *l.* due to bondholders, 10,000 *l.* having been paid off, *ib.* 4204–4209——Number of Board meetings and of committee meetings; very good attendance of members, *ib.* 4235–4239. 4309–4316——Co-operation of the members in promoting the public interests, *ib.* 4240–4242.

Explanation relative to the payment of the conservators for attendances; that is, by an annual sum of 1,200*l.*, *Burstal* 4257–4270——Good attendance of the conservators further adverted to with reference to the question of payment for attendances, *ib.* 4367–4384——Further reference to the reduction effected in the debt of the Conservancy Board; this has been owing to receipts for foreshore taken for the embankment, *ib.* 4432–4437. 4469–4472——Interest taken by the conservators generally in the state of the navigation, *ib.* 4453, 4454.

Very regular attendance at the meetings of the Board, *Sir F. Nicholson* 4481, 4482——Facility given to the public wishing to be heard before the Board, *ib.* 4483–4485——Summary of the principal matters under charge of the conservators, *ib.* 4486–4488——Satisfactory working of the Conservancy Board as constituted previously to and since 1864, *ib.* 4516——Arrangement as to the payment of the conservators according to attendances, *ib.* 4589–4592.

Amount of payment of the conservators adverted to as being no remuneration for their services, but only intended to cover expenditure out of pocket, *Thorp* 4687, 4688——Further reasonable provision required to cover expenses of the conservators, if they are to inspect the river up to Oxford, *ib.* 4689, 4690.

8. *Conclusions of the Committee relative to the Constitution of the Board:*

Resolution of the Committee that there should be one governing body for the Thames above and below Staines, and that such body should be the conservators of the river, with a modification of their constitution, *p.* 345——Recommendation that five members be added to the Conservancy Board, four of whom should be elected as proposed in the Bill, and one appointed by the Board of Trade, *ib.*

See also *Bye Laws. Landowners. Lea River. Metropolitan Board of Works. Rate. Reading*, 3. *Responsibility. Sewage, &c. Water Supply.*

Corporation of London. Representation of the Corporation of the City upon the Conservancy Board, whereas the Metropolitan Board are not represented, *Sir J. Thwaites* 3834; *Tite* 4111, 4112. 4137–4141. 4171–4173——Arrangement in 1857, under which the Corporation of London are largely represented on the Conservancy Board, they having previously had the river under their own care, *Burstal* 4183–4186.

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Corporation of London—continued.

Argument that the seven conservators nominated by the Corporation are not mere representatives of the City nor of particular commercial interests, but act collectively for the public good, *Thorp* 4694-4702. 4708-4710. 4724-4738——Long period for which the conservancy of the river was in the hands of the Corporation; decided objection to any diminution of the representation of the latter at the Conservancy Board, *ib.* 4703-4707. 4750-4757.

Cost of New Works and Repairs:

1. *Estimates of the outlay required on the Upper Navigation Works.*
2. *Source whence the Capital outlay may be procured.*

1. *Estimates of the outlay required on the Upper Navigation Works:*

Excess now required beyond witness's estimate in 1865 of 30,000 *l.* for the restoration of the works generally, *Castle* 510, 511——Further statement as to the extent and character of the works comprised in witness's original estimate of 30,000 *l.*, and as to the excess necessary beyond this sum, irrespectively of additional works, *ib.* 706-726. 737-739——Inability of witness to make any statement of the probable cost of the works under the Bill before the Committee, *ib.* 983-986——The estimate of from 30,000 *l.* to 50,000 *l.* for putting the navigation in order, does not include several works contemplated by the Bill, *ib.* 1038-1042.

Witness fully adheres to the statements in a report made by him to the conservators, dated July 1864, relative to the state of the river, and the outlay required on navigation works, &c., *Leach* 1206-1208——Necessity of an expenditure of at least 110,000 *l.* for putting the navigation between Oxford and Staines in a workable state, *ib.* 1210-1212——From 30,000 *l.* to 50,000 *l.* should be expended at once for absolutely necessary works, *ib.* 1213-1216——Entire inadequacy of an expenditure of 30,000 *l.*, which would, in fact, be money thrown away, *ib.* 1363-1365.

Further reference to witness's estimate of 112,000 *l.*, as made on the lowest possible scale, and as not sufficient to put the navigation in a proper and substantial state, *Leach* 1380-1414——Details as to the estimated expenditure for repairs at each lock and weir, and the outlay for dredging and banks, *ib.* 1387-1399——Probability of not less than 150,000 *l.* being now required for carrying out the works comprised in witness's estimate; they are doubtless in a much worse condition than when he saw them last year, *ib.* 1405-1414.

Explanation that witness's estimate does not comprise repairs for the works above Oxford, except Osney Lock, *Leach* 1415-1423——Neither does his estimate provide for the repair of the weirs in private hands, *ib.* 1424-1429. 1651-1657——Necessity of an excess of expenditure beyond 150,000 *l.* if all the weirs and the banks generally are properly repaired, *ib.* 1438-1444——Contemplated outlay by the conservators for navigation purposes only, though the works will answer other purposes as well, *ib.* 1445-1448. 1460-1470——Difficulty of witness in estimating the increase to be made to the expenditure in respect of works above Oxford, *ib.* 1639-1646——Improbability of any reduction of the estimates of witness by substituting in several cases one lock for two, *ib.* 1647-1650.

Concurrence generally in the estimate of Mr. Leach for the works required between Staines and Oxford, *Beardmore* 2176——Concurrence further expressed in the estimate of Mr. Leach for putting the river in order, though a proper survey will be necessary before the expense can be closely calculated, *ib.* 2289-2300——Want of a large immediate expenditure upon the works in the Thames, *ib.* 2299. 2343——Probability of not less than 150,000 *l.* being required for the works generally, *ib.* 2414.

Understanding as to a sum of about 100,000 *l.* being required for the works on the upper navigation, *Burstal* 4438, 4439.

2. *Source whence the Capital outlay may be procured:*

Contemplated raising of a capital sum upon the security of the proposed payment by the water companies, such sum to be appropriated in carrying out the required works and repairs, *Leach* 1596-1601——Necessity of providing capital for the works without resorting to the annual returns which will be required for the annual maintenance, *ib.* 1658-1660.

See also *Dredging. Locks. Maintenance of Works. Mills, &c. Rate. Survey. Water Supply.*

Course of the River. Alteration of the course of the river, through its being neglected, so that shoals are formed on one side and the land is wasted away on the other, greatly to the injury of the navigation and of the water, *Rawlinson* 2567-2571.

Croydon. Information relative to the irrigation of land with the sewage of Croydon, and the financial results of the operations, *Rawlinson* 2614-2616. 2624, 2625. 2634, 2635——Period of operation of the Croydon irrigation works adverted to; their cost per acre, *ib.* 3026-3029——Heavy expenditure in experiments at Croydon before any successful system was attained, *Rogers* 3341, 3342.

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D.

Danbe, Mr. Statement explanatory of the title of Mr. Danbe to the tolls at Iffley Lock, *Godfrey* 4802-4838.

Resolution of the Committee that Mr. Danbe is entitled to compensation for the value of his tolls, and that these should be valued as they stood before the notices were given for the Bill, by arbitration, *p.* 347——Also that the compensation should be charged on the surplus arising from the actual navigation tolls, after paying all expenses of maintenance, with power to the conservators to redeem the same, *ib.*

Clause agreed upon between the promoters and Mr. Danbe, *p.* 360.

Drainage of Lands:

Power of the Upper Navigation Commissioners with reference merely to navigation, irrespectively of the question of land drainage or the preservation of the banks of the river, *Graham* 54–57——Conflict between the interests of the landowners, as to drainage, and the interests of the millowners and of the navigation, *Castle* 658–666——Interest of the Commissioners in the navigation rather than in the drainage; examination hereon as to their having fixed the water level at a height injurious to the land, *ib.* 804–816. 840 859.

Obstacle, without the consent of the Commissioners, to the landowners in the upper district combining to form embankments and drainage areas for the relief of their land from water, *Castle* 817–841——The navigation interest and the land interest should and might be made to work together for the benefit of both, *ib.* 840——Present conflict between the landowners' interest and the navigation interest further adverted to, *ib.* 977. 981.

Approval of the resident landowners above Oxford having some control in the management of the river, with a view to improved land drainage, as well as improved navigation, *Castle* 978–982. 1155, 1156——Improvements effected by the landowners as regards drainage since the Report of Mr. Pusey's Committee in 1853, *ib.* 1120–1122——Belief that all the interests on the river may be advantageously combined and may be served by a proper scheme of works; reference more especially to the interest of the land apart from that of the mills and navigation, *ib.* 1139–1153.

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LANDOWNERS:

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Advantage of the proposed works to the riparian owners, the question of their directly contributing being, however, a difficult one, *Beardmore* 2346–2383. 2418–2426——Contribution made by the riparian owners in the shape of tolls, towards an improved navigation, *ib.* 2348–2351. 2418. 2422–2424——Willingness expressed by several landowners to contribute towards works which should prevent inundations, *Rawlinson* 2856.

Suggestion as to the mode in which the lands benefited by the improvements should be called upon to contribute, *Harrison* 3221–3226——Consideration of the feeling of the landowners upon the question of their paying towards the required works; belief that the bulk of them are favourable to being rated for the purpose, *ib.* 3227–3231, 3252–3255——Dissent from the argument that the landowners being injured by the improper state of the river, it is the duty of the managing body to remove the existing nuisance and cause of injury without the owners being called upon to pay, *ib.* 3232–3251——Contemplated payment by the landowners, with reference directly to the prevention of flooding and the removal of pollution, *ib.* 3265, 3266.

Resolution of the Committee that a rate on riparian proprietors is not at present necessary, *p.* 345.

4. *Suggested representation of the Landowners at the New Board.*

Evidence in favour of the landowners on the Upper Thames being directly represented at the Board, *Graham* 375. 386–397. 426–448. 453–458——The landowners should send one or more representatives, *Castle* 978–982. 1155, 1156——Large representation of the landowners on the present commission, *ib.* 1023–1026.

See also *Banks of the River. Drainage of Lands. Oxford. St. John's College* (*Oxford*).

Lawrence, Walter Lawrence. Petition by him against the Bill, p. 2.

LEA RIVER:

1. *Works carried out by the River Lea Trustees for the Improvement and Maintenance of the Navigation.*
2. *Measures undertaken for the exclusion of Sewage and other Impurities.*
3. *Increase of Traffic through the Improvement of the Navigation.*
4. *Sources of Receipt of the Trustees.*
5. *Arrangement with the New River and East London Water Companies.*

1. *Works carried out by the River Lea Trustees for the Improvement and Maintenance of the Navigation:*

Improvement in carrying off the floods through the deepening of the river by the trustees, and the rebuilding of the weirs, *Beardmore* 2086. 2099——Total of 8,000 *l.* or 9,000 *l.* a year as the cost of keeping up the River Lea, over a distance of twenty-seven miles, *ib.* 2215–2218——Very expensive character of the maintenance of the Lea, as compared with the Thames between Staines and Oxford, *ib.* 2218–2222——Expense of about 270,000 *l.* in putting the Lea into its present efficient state, *ib.* 2223–2225——Large reduction in the number of locks, whilst a great expense has been incurred in widening and deepening the river, *ib.* 2292–2295, 2354–2359——Improvements carried out in the Lea ever since 1850, the money being raised on debentures on security of the tolls, &c., *ib.* 2301–2305.

Evidence, 1866—*continued.*

LEA RIVER—continued.

1. *Works carried out by the River Lea Trustees, &c.*—continued.

Explanation as to the character of the works on the Lea upon which capital expenditure has chiefly been incurred, and as to the much smaller relative expenditure estimated for putting the upper navigation of the Thames in repair, *Beardmore* 2519-2535——The locks on the Lea have been reduced from twenty-eight to twenty, and of these fourteen or fifteen have been rebuilt, *ib.* 2526, 2527——Very large scale upon which the works have been carried out; provision made for the introduction of steam navigation, *ib.* 2545–2549.

2. *Measures undertaken for the exclusion of Sewage and other Impurities.*

Advantage of the three-mile clause of the Thames Conservancy Act of 1864 in enabling the River Lea Trustees to take summary steps for excluding impurities within three miles of the junction of the Lea with the Thames, *Beardmore* 2072–2075. 2088–2090——Want of further control on the part of the trustees over the sewage or drainage into the Lea above three miles from the Thames, *ib.* 2072–2085——Considerable expense incurred in removing impurities from the river, *ib.* 2091–2093.

3. *Increase of Traffic through the Improvement of the Navigation:*

Details relative to the great increase of traffic on the River Lea since the improvement of the navigation, *Beardmore* 2087. 2182. 2187–2203. 2205–2210——Effect of the competition of railways upon the navigation and the traffic, *ib.* 2189–2202.

4. *Sources of Receipt of the Trustees:*

Three sources whence the funds of the trustees are derived; that is, from landed property and mills, from water rents, and from tolls, *Beardmore* 2087——Great reduction in the river tolls, so that, notwithstanding the increase of traffic, the receipts have largely fallen off, *ib.* 2198–2200. 2207–2210——Valuable character of the landed property of the trustees, *ib.* 2323–2325——Reduction of the debt in the event of there being a surplus income, *ib.* 2326–2331——Four mills on the Lea, which belong to the trustees; absence of difficulty in letting them, and working them, *ib.* 2506–2509.

5. *Arrangement with the New River and East London Water Companies:*

Data appended by the New River Company in support of a charge of 10*s.* per million gallons; witness, however, is not acquainted with all the circumstances of the payment made by the Company to the River Lea Trustees, *Leach* 1221–1223. 1570–1583. 1602–1609.

The New River and East London Water Companies take their supply from the River Lea, or about one-fourth of the entire supply of London, *Beardmore*, 2060, 2061.——Incorporation of the River Lea Trustees in 1850, when power was given them to sell the water, with a view to putting the river in good condition, *ib.* 2062, 2063——Particulars relative to the arrangement between the trustees and the water companies under Act in 1855, the former having since executed some very beneficial works, and having excluded impurities from the river, *ib.* 2064–2086——Receipt of 1,500 *l.* a year from one water company, and of 2,000 *l.* from the other, *ib.* 2087. 2204.

Further statement relative to and in approval of the arrangements under which the River Lea Trustees receive payments from the New River and East London Companies, *Beardmore* 2135-2141——Regulation as to the quantity of water to be taken by the Companies, *ib.* 2139. 2320–2322——Arrangement by which the New River and East London Companies may, by providing the capital, call upon the River Lea Trustees to execute certain works, *ib.* 2170, 2171——Beneficial effect upon the navigation of some of the works carried out for and at the expense of the water companies, *ib.* 2211–2214.

Arrangement in regard to the supply of water to the mills, subject to which the water companies pay a rent to the River Lea Trustees, *Beardmore* 2306–2322——Intimate connection existing from the first between the New River Company, and the River Lea Trustees; representation of the former on the Board of Trustees, *ib.* 2360–2367——Power first given to the Trustees under the Act of 1850, to make agreements for the supply of water to the companies, *ib.* 2368–2371. 2427, 2428——New arrangement under the Act of 1855, by which the companies pay a fixed price to the trustees, *ib.* 2372, 2373.

Payment of 42,000 *l.* by the New River Company, under the Act of 1855, for certain specific works, *Beardmore* 2373–2375——Circumstance of the New River Company having brought in a Bill in 1854 for taking possession of the river, jointly with the East London Company; adoption instead of the agreement under the Act of 1855, *ib.* 2376–2379——With regard to the obligation upon the River Lea Trustees to execute works for the water companies, and, if possible, to divert sewage, it is very desirable that in the case of the Thames there should be the strongest power to prevent the pollution of the river, *ib.* 2380–2405——Recognition for the first time in 1740 of a pecuniary right or property of the trustees in the water, *ib.* 2500–2505.

Accuracy of a former statement by witness, (questioned by Mr. Toulmin Smith), as to the rate of payment by the New River Company for their supply from the River Lea, *Leach* 3160–3162.

Evidence, 1866—*continued.*

Leach, Stephen William. (Analysis of his Evidence.)—Is engineer to the Conservators of the Thames; has had a lengthened experience of the river, 1199–1203——Fully adheres to the statements in a report made by him to the Conservators, dated July 1864, relative to the state of the river and the outlay required on navigation works, &c., 1206–1208——Necessity of an expenditure of at least 110,000*l.* for putting the navigation between Oxford and Staines in a workable state, 1210–1212——From 30,000*l.* to 50,000*l.* should be expended at once for absolutely necessary works, 1213–1216——Necessity of provision being made for scavengering the river, 1217—1219.

Fairness of the water companies being required to contribute towards the expense and maintenance of works for maintaining and purifying the supply of water in the river, 1220–1254——Circumstance of the New River Company and the East London Waterworks paying for their supply from the River Lea, 1221–1223——Immense quantity of water taken from the Thames by the Water Companies, 1225, 1226——Suggestion that the companies be charged 10*s.* per 1,000,000 gallons, which would bring about 10,000*l.* a year towards the expenses of the Conservancy Board, 1240–1248.

Important value of the navigation works to the water companies, as affecting the purity of the water, 1249–1251. 1255–1258——Reference to a scheme for supplying London with water from South Wales, 1249–1251——Considerable expense anticipated in preventing the fouling of the river by sewage, and refuse from mills, &c., 1259——Constant vigilance exercised by the Conservators in excluding sewage, &c., from the river, 1260–1262——Result of steps taken by the Conservators for preventing the discharge of the Kingston sewage into the river, 1262–1296. 1334, 1335.

Witness produces a specimen of water recently taken from Teddington Lock, which is of a very filthy character, and shows the necessity of guarding against the discharge of sewage from Kingston and other towns on the river, 1262–1295——The water companies' supply is not affected by the Kingston sewage, which comes in lower down, 1276–1284. 1305–1308——Quantity of organic matter in the water supplied by the companies from the Thames: room for much improvement, 1297–1304.

Facility of an efficient supervision and management of the river in the upper districts by the present Conservancy Board, with an increase of three members representing those districts. 1309–1315——Absence of difficulty in reconciling the rights of the mill-owners and of the navigation, 1316–1320——Necessity of the Conservators having the control of all the weirs, 1321, 1322——There must also be a system of through rates, 1323——The absolute control of the tolls should be in one body, 1324——Considerable safeguard for each interest by there being a right to question the necessity of bye-laws, 1325–1329.

Expediency of some addition to the powers of the Conservators in regard to sewage discharges and other refuse matter: hardship, however, in requiring sewage to be diverted at once, 1330–1345——Very defective state of Bell Weir, so that an immediate outlay upon it is urgently required, whereas the Navigation Commissioners have no funds for the purpose, 1347–1355. 1361, 1362——Injurious effect upon the river by abandoning the upper navigation works; increased injury from floods, 1356–1360——Entire inadequacy of an expenditure of 30,000*l.*, which would, in fact, be money thrown away, 1363–1365——Importance of a jurisdiction over the river and the embankments above Oxford, though the navigation between Oxford and Lechlade might, for the most part, be abandoned, 1366–1379.

[Second Examination.]—Further reference to witness's estimate of 112,000*l.*, as made on the lowest possible scale, and as not sufficient to put the navigation in a proper and substantial state, 1380–1414——Details as to the estimated expenditure for repairs at each lock and weir, and the outlay for dredging, and banks, 1387–1399——Probability of not less than 150,000*l.* being now required for carrying out the works comprised in witness's estimate; they are doubtless in a much worse condition than when he saw them last year, 1405–1414.

Explanation that witness's estimate does not comprise repairs to the works above Oxford, except Osney Lock, 1415–1423——Nor does his estimate provide for the repair of the weirs in private hands, 1424–1429——Limited extent also to which the banks of the river are included for repairs, 1430–1444——Necessity of an excess of expenditure beyond 150,000*l.* if all the weirs, and the banks generally, along the river are properly repaired, 1438–1444——Contemplated outlay by the Conservators for navigation purposes only, though the works will answer other purposes as well, 1445–1448. 1460–1470.

Expectation that the receipts from tolls, by improving the navigation, will about cover the annual outlay, 1449–1459——Benefit of the works to the water companies, landowners, mill-owners, &c., so that, if it were practicable, these interests should contribute, 1460–1473——Examination upon the question as to the character and amount of benefit to the water companies, with reference to which it is proposed to charge them for their supply, 1474–1479, *et. seq.*——Obstacle to the assessment of any payment to be borne by landowners, 1475–1478——Good answer of the water companies to the competing scheme of Mr. Bateman, for bringing water from Wales, if the Thames water were much more pure than it now is, 1489. 1519–1524.

Evidence, 1866—*continued.*

Leach, Stephen William. (Analysis of his Evidence)—*continued.*

Further explanation relative to a specimen of water from Teddington Lock: this does not represent the ordinary state of the river at this point, 1490–1517——Impression as to there being frequent complaint now made about the quality of the London water, 1525–1531——Effect both of the weirs and of impounding the sewage in improving the purity of the river, 1532–1545——Probable expenditure required, in order to carry out the exclusion of sewage, &c. under the supervision of the Conservators: uncertainty as to the amount of law expenses, 1546, 1547. 1594, 1595.

Witness repeats that it would be fair to tax other benefited parties as well as the water companies, only that it is not practicable, 1559–1564——Calculation showing that a charge of 10*s.* per 1,000,000 gallons taken from the Thames would produce 8,420*l.*, 1565–1574——Data afforded by the New River Company in support of a charge of 10*s.* per 1,000,000 gallons; witness is not, however, acquainted with all the circumstances of the payment made by this company, 1570–1583. 1602–1609——Large expenditure entailed upon the companies in removing their works to Kingston, &c., whereas they were not empowered to raise their rates; the removal of the works had, however, become a matter of necessity, 1584–1592.

Contemplated raising of a capital sum upon the security of the proposed payment by the water companies, such sum to be appropriated in carrying out the required works and repairs, 1596–1601——Good fortune hitherto of the water companies in receiving their water for nothing, 1600, 1601——Important benefit of the works to the companies, irrespectively of the exclusion of the sewage, 1610–1612——Considerations as to the relative amount of impurity in the water supplied by the Chelsea, Lambeth, and other companies; exceptions taken to a certain analysis of specimens of the supply, 1613–1628.

Witness is not the author of the suggestion for taxing the water companies, 1629——Alteration of witness's views within the last two years as to the importance of the weirs in improving the supply available to the companies, 1630–1633——Difficulty of witness in estimating the increase to be made to the expenditure in respect of works above Oxford, 1639–1646——Improbability of any reduction of the estimates of witness by substituting in several cases one lock for two, 1647–1650——Doubt as to the extra expense necessary if the private weirs are to be restored and maintained by the Conservators, 1651–1657.

Necessity of providing capital for the works, without resorting to the annual returns which will be required for the annual maintenance, 1658–1660——Further statement as to the uncertain expense involved in the exclusion of impurities from the river, 1661–1670——Necessity of locks if there are weirs for any purpose, it being improbable, however, if the navigation were abandoned that weirs would be permitted, 1671–1676. 1759–1780——Consideration of the present legal powers of the Conservators for the prevention of the discharge of refuse matter into the river, and of the powers proposed under the Bill, 1677–1686.

Fairness of its being obligatory to exclude impurities if the water companies are required to contribute, 1687–1692——Statement to the effect that there should be power to require the owners to keep the banks in repair, 1693–1701——Statement as to a certain section of the Thames Conservancy Act relative to licenses for embankments being excepted from the Bill, 1695–1699. 2002–2010——Objection of the Conservators to the provision that they shall pay the costs and expenses of the Bill, they not being the promoters of it, 1702–1704. 2000, 2001.

Circumstance of there being no power under the Bill to form reservoirs for equalising the supply, 1705–1709. 1731——Important effect of the abolition of the system of flashes in regulating the quantity of water in the river, 1709–1711——Very injurious results in many ways if nothing were done to the river above Staines, the water companies suffering as well as other interests, 1711–1724——Non-complaint under the present state of things in regard to the amount of the water companies' supply; the consumption is, however, greatly increasing, 1725–1730.

Further admission that if a rate were practicable, it should be enforced, 1732, 1733——Willingness of individual proprietors to contribute in the way of rate, but not of the proprietors generally, 1734–1739——Large outlay in the rebuilding of certain locks and in dredging, on account of the payment of 1,400*l.* a year received from the water companies since 1852, 1743–1754.

Change of witness's opinion in regard to the effect of embankments upon the supply and quality of the water for the water companies, 1755–1758——Interest of the mill-owners to maintain weirs or dams if the navigation were abandoned; this would not, however, be permitted, 1759–1762. 1769–1779. 1798–1808——Further argument that weirs are a necessary part of locks, and that the water companies should fairly be called upon to pay towards the expense of repairing the latter, on account of the benefits derived from the former, 1760–1779. 1798–1812.

Evidence, 1866—*continued.*

Leach, Stephen William. (Analysis of his Evidence)—*continued.*

Advantage to the water companies on account of the control exercised over the millowners in the interests of the navigation, 1780. 1786–1792——Doubt as to any better definition being required of the duties or powers of the Conservators in regard to the exclusion of sewage; uncertainty in any case as to the amount of law expenses in enforcing their powers, 1781–1785——Absence of any difficulty to the navigation on account of the quantity of water abstracted by the companies, 1793–1797.

Examination to the effect that though Commissioners or Conservators may not be required for the Windrush, Charwell, or other affluents of the Thames, they are nevertheless essential for the management of the latter river, 1813–1842——Very little navigation above Oxford further adverted to, 1843–1851——Notwithstanding the practical absence of navigation above Ensham Bridge, witness further contends that the Conservators should have a control over this district, in order to see that the banks are kept up by the owners, and that there are no encroachments upon the river, 1852–1883——Insufficiency of the formation of drainage areas above Ensham Bridge, without a general control by the Conservators, 1858–1864.

Probability of the tolls paying the current expenses, but leaving nothing for interest on the capital outlay or bonded debt, 1884–1887——Non-objection to other interests being taxed besides the water companies, 1888–1890——Additional powers proposed to be vested in the Conservators, in regard to sewage in the upper districts, beyond their present powers in the matter, 1892–1894. 1900—— Character of the redress available to millowners or proprietors in the matter of bye-laws further adverted to, 1894–1897—— Sufficient provision in the Bill for the representation of interests to be affected by the bye-laws, 1898, 1899.

Dissent from the view of Mr. Graham and Mr. Castle, that the Local Boards of towns above Staines, such as Reading, Oxford, &c., should be represented on the new Conservancy Board, 1901–1907——Good attendance of the members at the meetings of the Board, 1908–1912. 1974, 1975——Power of the Conservators in the matter of sewage in the upper and lower navigation respectively, 1913–1920——Approval of the power of preventing any new drainage into the river from such places as Reading, 1921–1939—— Expediency of a longer time than twelve months being allowed to towns to divert their sewage from the river, 1931–1937.

Supply of water to Windsor Castle adverted to as depending very much on there being a proper height of water for the flow of the river, 1940–1942——Expediency with reference to the level of the water in the upper districts of a control on the part of the Conservators, 1943–1949——Improbability of any heavy expense to landowners in being required to repair their banks, 1950–1956——Advantage of dredging in facilitating the drainage of the land, 1957, 1958——Instances of lands having been greatly relieved of floods by dredging, 1958——Importance generally of dredging in the upper parts of the river, 1959–1963——Collision of interests by leaving any part of the river under local control, 1964.

Practical experience of the Conservancy Board in matters similar to those embraced in the management of the upper districts, 1965–1969——With regard to the protection of the upper interests by the system of passing bye-laws, and of keeping separate accounts, it is nevertheless reasonable that the upper part of the river should be represented by Commissioners at the Board, 1970–1976——Reference to a certain mill at Chertsey, as the only one on the river, or close to it, below Staines, 1977–1983.

Necessity, irrespectively of any navigation works, of the millowners being required to keep passages open in the weirs so as not to prevent the use of the river as a highway, or to keep back the floods, 1984–1994——Great increase of opposition to the Bill if it had attempted to impose a rate upon the riparian owners, 1995–1999——Further statement as to the discrepancy in the analyses made of the water supplied by the different companies, 2011–2016. 2018.

Advantage to the companies in being compelled to take their supply where the water did not require so much filtration, 2019–2021. 2027——Doubt as to any further saving in filtration by excluding refuse discharges from the stream, 2020–2024——Impression that the companies are not charging their maximum rates, whilst they may be said to have a monopoly, 2028–2030.

Further statement as to the advantage of deepening the river, and of removing shoals, by means of dredging, in connection with works for the drainage of the land, 2031–2056 ——Importance of bringing the affluents of the Thames under some control as well as the main stream, 2045, 2046——Necessity of a general survey of the river before any works are planned, 2047–2049——Witness sees no objection to an abandonment of the navigation above Oxford, except for a short length, 2054.

[Third Examination.]—With regard to the present injurious state of the lock at Bell Weir, above Staines, the Conservators are prepared to repair it, but require authority for the purpose, it being out of their district, 2958–2972.

Evidence, 1866—*continued.*

Leach, Stephen William. (Analysis of his Evidence)—continued.

[Fourth Examination.]—Accuracy of a former statement by witness, questioned by Mr. Toulmin Smith, as to the rate of payment by the New River Company for their supply from the River Lea, 3160–3162.

[Fifth Examination.]—Very limited action under the Act of 1857 with reference to the cutting away of banks; necessity of the power proposed under the present Bill in this matter, 5499–5510——Absence of any unreasonable demands by the Conservators in regard to owners being called to repair their banks or wharves, 5511–5513.

Lechlade to Cricklade. Circumstance of nothing having been done by the Commissioners in the district between Lechlade and Cricklade; this district has no share in the election of Commissioners, *Graham* 479–481.——*See* also *Newbridge. Oxford.*

Level of the River. Expediency with reference to the level of the water in the upper districts of a control on the part of the Conservators, *Leach* 1943–1949——Importance of high regular levels being kept up with reference to the purity and regularity of the supply of water, *Beardmore* 2094——Approval of the proposed clause as to the maintenance by the Conservators of the present high and low-water marks, *Witherington* 5347, 5348.——*See* also *Drainage of Land. Fishing Rights. Flashing.*

Lincoln College (*Oxford*). Annual receipt by the college of more than 50*l.* from a moiety of the tolls at Iffley Lock; gradual increase of the receipts since 1851, *West* 4772–4774. 4797–4801——Limited expenses incurred by the college in respect of the tolls; obligation upon them to repair the lasher but not the lock, *ib.* 4776–4778. 4794——Particulars relative to the title of the college to the tolls; antiquity of their right, whilst there is now a Parliamentary title, *ib.* 4779–4796.——*See* also *Danbe, Mr.*

Loans. See *Bondholders. Interest on Loans.*

Local Boards (*Exclusion of Sewage, &c.*) Character and extent of the authority contemplated in Local Boards, concurrently with the authority of the Conservancy Board, in the matter of sewage, *Rawlinson* 3008–3017——Frequent obstruction on the part of ratepayers so that Local Boards require some outside authority to enable them to do what is necessary, *ib.* 3015——Suggestion that the powers of the constituted authorities, as in the case of the Local Board at Reading, should not be affected by the Bill, *Rogers* 3356——Defect in the Public Health Act in not giving enlarged powers to Local Boards of Health to deal with rivers, *ib.* 3596.

Clauses proposed with reference to Local Boards of Health being empowered to take certain steps with reference to the diversion of sewage from the Thames, *pp.* 354–355——Rejection of such clauses by the Committee, *p.* 355.

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Local Representation (*Conservancy Board*):

As regards the constitution of the body for managing the Thames, there should be a proper representation of local interests above Staines, *Graham* 324–334——The Navigation Commissioners have suggested that the five districts under them should send ten members to the proposed new Board, *ib.* 335–338——Approval of a Board comprising eighteen members, six to be nominated by the present Conservancy Board, six by Oxford, Reading, and other places on the upper Thames, and six by the landowners, millowners, &c., *ib.* 375.

Further statement that the Board proposed by the present Bill is objectionable, as not containing any adequate representation of local interests upon the upper navigation, *Graham* 386–397. 426 *et seq.*——Considerations as to the constituency for electing the representatives of the upper districts, *ib.* 459–465. 468–470.

Opinion in favour of the Local Boards of Health in the Thames district being represented at the Board of Conservators, *Castle* 578——Objection to the proposed constitution of the new Board, as not comprising any proper representation of the landowners and others in the upper districts, *ib.* 1008–1013——Further argument that the upper districts should be more fully represented than is proposed by the Bill, *ib.* 1127–1138. 1154–1158——Suggestion that each town on the river where there is a Local Board of Health should send one representative to the new Commission, *ib.* 1154, 1155.

With regard to the protection of the upper interests by the system of passing bye-laws and of keeping separate accounts it is nevertheless reasonable that the upper part of the river should be represented by Commissioners at the Board, *Leach* 1898, 1899. 1970–1976——Dissent from the views of Mr. Graham and Mr. Castle that the Local Boards of towns above Staines, such as Reading, Oxford, &c., should be represented on the new Conservancy Board, *ib.* 1901–1907.

Evidence, 1866—*continued.*

Local Representation (*Conservancy Board*)—continued.

Explanation with regard to a recommendation by witness that the Conservancy Board should be increased by representatives of the local interests of the upper Thames, to be elected by the Thames Commissioners, *Rawlinson* 3132–3136——Approval of an adequate number of representatives of the local interests of the upper Thames being added to the Conservancy Board, *Way* 3205–3209.

Feeling throughout the upper district that it should be represented as fully as the lower district at the new Board, whereas the proposed addition of three Conservators for the upper district would be no representation at all, *Rogers* 3373–3402——Apprehended unfair dealing with the interests of the upper district if not represented at the Board, *ib.* 3388–3397——Suggestion that the different corporate bodies should send direct representatives, *ib.* 3397–3401——Approval of one Board for the upper and lower navigation, provided the upper districts are as fully represented as the lower districts, *ib.* 3658–3668. 3727–3738. 3741–3745——Feeling in all the towns that they should be fairly represented, *ib.* 3745.

Approval of a representation of the towns and other interests in the upper Thames, *Sir J. Thwaites* 3899–3903——Fairness of the principle that those who have property on the river, and who contribute to the tolls, should have a voice in the representation; question hereon, whether Oxford and other towns on the upper navigation should be represented, *Burstal* 4390–4411——Approval of a representation of the upper district at the new Board of Conservation; that is, if any addition be made to the Board at all, *Sir F. Nicholson*, 4510. 4517. 4531–4537. 4597–4599——Approval of a limited representation of the upper districts if placed under the Conservators, *Thorp* 4656–4658. 4691, 4692.

Locks and Lockowners. Very dilapidated state of the locks and weirs generally, *Graham* 58, 59; *Castle* 489–499. 508, 509——Explanation of the original title of the old lockowners to the tolls, as showing that, in consideration of the tolls, they rendered assistance to the barges and vessels in their passage, *Graham* 63–74——Power of the Commissioners under the Act 11 Geo. 3, in regard to making pound locks, and to a settlement of the charge to be paid by the barges, &c., *ib.* 75–78——Assessment of the lockowners' tolls according to the tonnage of each barge, so much being taken for every five tons, *ib.* 115, 116.

Information relative to the original system of locks and weirs, as showing that the boats were taken through passages in the weirs, in connection with the mills, the owners of such passages providing assistance, *Graham* 117–124——Substitution by the Commissioners of the pound locks for the through weirs, since which substitution the old lockowners have rendered no service for the tolls, *ib.* 125–129——Payment monthly to the lockowners of the tolls collected by the pound keepers under the Commissioners, *ib.* 142–146. 151, 152——Between Oxford and Cricklade only two pound locks have been made by the Commissioners, *ib.* 147–149——Total of twenty old locks between Staines and Oxford, *ib.* 147.

The average width of the locks is eighteen feet, *Castle* 657——Estimate of 76,236 *l.* as the expenditure necessary for locks, *Leach* 1387——Illustration of the dangerous state of the locks and weirs on the upper navigation, *Rawlinson* 2564–2566.

Clause proposed providing compensation for owners of locks if in good repair, *p.* 333.

See also *Abandonment of Works. Cost of New Works and Repairs. Iffley Lock. Medley Lock. Repairs. Romney Lock. Tolls and Rates.*

M.

Main Drainage Works. Immense expenditure by the Metropolitan Board of Works for the purification of the Thames adverted to as rendering it more than ever essential that pollution should be excluded from the upper parts of the river, *Rawlinson* 2984–2995——Great improvement in the purity of the river and in the health of the metropolis, owing to the operations of the Main Drainage Works, *Sir J. Thwaites* 3789, 3820–3822——Immense expenditure of the Metropolitan Board in excluding the London sewage, *ib.* 3798. 3912–3915.

Maintenance of Works. Witness has made no estimate of the annual cost of keeping up the navigation under the present Bill, *Castle* 727, 744–750——Difficulty of raising sufficient receipts from the navigation, and from the parties benefited by improved works, in order to render the outlay under the Bill self-supporting, *ib.* 999–1007.

Expectation that the receipts from tolls, by improving the navigation, will about cover the annual outlay, *Leach* 1449–1459——Probability of the tolls paying the current expenses, but leaving nothing for interest on the capital outlay or bonded debt, *ib.* 1884–1887.

Suggestion in regard to separate contributions for the required capital and for the current expenses of the conservancy in connection with the scheme for raising a loan for the works, *Beardmore* 2172——Estimate of from 5,000 *l.* to 8,000 *l.* as sufficient to maintain the navigation between Staines and Oxford if the works are put in proper order, *ib.* 2173–2175. 2219–2221——Reduced cost of annual maintenance accordingly as the

Evidence, 1866—*continued.*

Maintenance of Works—continued.

works are in the first instance efficiently re-constructed, *Beardmore* 2299, 2342–2344——Necessity of a lapse of some years before the annual expenses of the upper navigation will be met by the tolls; difficulty in the meantime, *ib.* 2455–2459.

Management of River. See *Conservancy Board.*

Medley Lock. Defective practice of drawing Medley Lock and other locks when summer floods come on, *Castle* 795–803.

Metropolitan Board of Works:

1. *Detailed Statement in Support of the Claim of the Metropolitan Board to be represented in the Management of the River.*
2. *Statement of Objections to the proposed Representation of the Metropolitan Board.*
3. *Unwillingness of Mr. Rawlinson to express any Opinion on the Subject.*
4. *Declaration on the part of the Promoters of the Bill.*

1. *Detailed Statement in Support of the Claim of the Metropolitan Board to be represented in the Management of the River.*

Summary of the powers and proceedings of the Metropolitan Board of Works under different Acts relating to the sewage and drainage of the Metropolis, *Sir John Thwaites* 3779-3788——Extensive area comprised within the jurisdiction of the Metropolitan Board, *ib.* 3790——Comment upon the representation of wharfingers, shipowners, &c. at the Thames Conservancy Board under the Act of 1864, whilst the Metropolitan Board are unrepresented, notwithstanding their interest in the river, *ib.* 3795-3798. 3806. 3839-3848. 3876-3886——Different points upon which conflict has arisen between the Metropolitan Board and the Conservancy Board, which conflict would have been avoided if the former Board had been represented at the latter, *ib.* 3798. 3801, 3802. 3814. 3837, 3838. 3863-3875.

Claim of the Metropolitan Board to be represented at the Conservancy Board in respect of the ratepayers of the metropolis, *Sir J. Thwaites* 3798. 3834-3836. 3849-3855——Expediency of a representation of the ratepayers at large on account of their interest in the purification of the river, *ib.* 3798. 3804. 3811-3813——Facility of selecting suitable men to represent the Metropolitan Board, *ib.* 3815——Circumstance of the Metropolitan Board having failed in their endeavour in 1864 to be represented at the Conservancy Board, *ib.* 3816–3819.

Absence of any medium of communication through there being City representatives on the Metropolitan Board and on the Conservancy Board, *Sir J. Thwaites* 3823–3834——Non-objection to the ratepayers sending their representatives direct to the Board, *ib.* 3849-3855——Inadequacy of the occasional attendance of a delegate from the Metropolitan Board, *ib.* 3868, 3869. 3945-3948——Inconvenience if the Metropolitan Board were represented by only one member at the Conservancy Board; three representatives would be a fair and reasonable number, *ib.* 3887. 3949-3951.

Part taken by the Conservators in preventing nuisances in the lower portions of the river; question hereon as to their having any jurisdiction over the Metropolitan Board, *Sir J. Thwaites* 3888-3891——Increased experience since 1864, upon which the Metropolitan Board re-urge their claim to be represented on the Conservancy Board, 3894–3898, 3939-3944——Probable effect of joint action between the two Boards in preventing unnecessary expenditure, *ib.* 3952, 3953.

Frequent contact with the Thames Conservators in carrying out the Main Drainage Works and Thames Embankment, *Bazalgette* 3978. 3984-3990——Numerous sewer outlets, running into the Thames, which are under the jurisdiction of the Metropolitan Board of Works, in connection with the Main Drainage and Thames Embankment, *ib.* 3979-3983——Necessity of the concurrence of the Conservators in connection with all projections into the river in respect of the outfall sewers, steamboat-piers, &c., *ib.* 3984–3990. 4010, 4011. 4040–4049.

Conclusion as to the importance of the Metropolitan Board of Works being represented on the Conservancy Board with a view to unity of action and the promotion of the public interests, *Bazalgette* 3991 *et seq.*——Great interest of the Metropolitan Board as representing the ratepayers in the purity of the river, *ib.* 3993-3998——Statement as to the main object of the consideration of the Board having been the exclusion of sewage from the river; action of the Board for this purpose in 1858, and previously, *ib.* 3993. 4021-4035. 4085-4087.

Obstruction to the progress of works of improvement through the present mode of communication between the Metropolitan Board and the Conservancy Board; instance in the case of the Chelsea embankment, *Bazalgette* 4010–4019——Further reference to the questions likely to arise out of the Main Drainage Works and Thames Embankment upon

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METROPOLITAN BOARD OF WORKS—continued.

1. *Detailed Statement in Support of the Claim, &c.*—continued.

upon which it is expedient that the Metropolitan Board should be directly represented at the Conservancy Board, *Bazalgette* 4036–4049. 4092–4098. 4101–4103——Concurrence in the suggestion that the Metropolitan Board should elect three of their own members to the Conservancy Board, *ib.* 4050. 4059. 4088–4091. 4099, 4100.

Evidence relative to the questions at issue between the Metropolitan Board and the Thames Conservators, with reference to the use of the material dredged from the river in the formation of the embankment; justification of the course pursued in the matter by witness's Board, *Bazalgette* 4060–4081——Necessity after the completion of the embankment, as well as at present of harmonious action between the two Boards, *ib.* 4092–4106——Permanent interest of the Metropolitan Board in preserving the river from impurity, so that they should be properly represented in the Conservancy Board, *ib.* 4101–4106.

Witness adduces sundry reasons in support of the proposition for representing the Metropolitan Board of Works upon the Thames Conservancy Board, *Tite* 4107 *et seq.*——It is unreasonable that whilst the City Corporation are represented on the Conservancy Board, the Metropolitan Board should not also be represented, *ib.* 4111, 4112. 4137–4141. 4171–4173——Important questions likely to arise out of the further embankment of the Thames on account of the jurisdiction of the Conservancy Board, so that it is most desirable to grant at once the representation proposed, *ib.* 4111——Avoidance of the difficulty experienced upon the question of ballast, if there had been a representation of the Metropolitan Board at the Board of Conservators, *ib.* 4112–4114. 4144–4146.

Suggestion that two members of the Metropolitan Board be elected by the Board to represent them in the Thames Conservancy, *Tite* 4116–4126——Important interest of the Metropolitan Board, as representing some 3,000,000 ratepayers, in the purification of the river, *ib.* 4129–4136. 4147–4167. 4176——Jurisdiction and control of the two Boards respectively adverted to as showing the expediency of unity of action, *ib.* 4148–4170——Opportunity offered by the present Bill for giving to the Metropolitan Board the representation denied them in 1864, *ib.* 4174–4176.

2. *Statement of Objections to the proposed Representation of the Metropolitan Board.*

Grounds for concluding that there is no necessity for a representation of the Metropolitan Board of Works at the Conservancy Board, *Burstal* 4244–4256——Statement as to the Metropolitan Board having no interest in the navigation, but only in the purity of the river on the part of the ratepayers, *ib.* 4244. 4349–4362. 4385–4388——Belief that the difficulty between the two Boards as regards the supply of material for the Thames Embankment would not have been avoided or lessened if the Metropolitan Board had been represented at witness's Board, *ib.* 4245–4249——Very few subjects upon which there has been any communication between the two Boards, *ib.* 4245. 4250–4252.

Improbability of many questions arising in future upon which conflict may occur between the Metropolitan Board and the Conservators, *Burstal* 4363–4366——Question as to any obstruction to business by the addition of one or two members from the Metropolitan Board, *ib.* 4386. 4477——Necessity of communication between the engineers of the Conservancy Board and Metropolitan Board, irrespectively of the question of representation of the latter, *ib.* 4474–4476.

Very few questions before the Conservators which affect the interests of the Metropolitan Board, *Sir F. Nicholson* 4489–4500——Particulars as to the number and class of communications which have passed between the Metropolitan Board and the Conservancy Board in the last eight years, *ib.* 4491–4500——Statement to the effect that the addition of one or two members of the Metropolitan Board to the Conservancy Board would impede rather than facilitate the transaction of business by the latter, *ib.* 4501–4508. 4608–4616.

Expectation that still fewer questions are likely to arise between the two Boards in the future than have arisen in the past; grounds for this conclusion considered, *Sir F. Nicholson* 4508. 4561–4571. 4578–4588——Little if any claim of the Metropolitan Board to be represented in the Thames Conservancy, as they have nothing to do with the river beyond keeping sewage out of it within certain points, *ib.* 4511–4515. 4538–4548. 4576, 4577. 4600, 4601——Further evidence as the question of communication between the Metropolitan Board and the Conservators, *ib.* 4549–4560.

Opinion that nothing would be gained by the Metropolitan Board of Works being represented on the Board of Conservators, *Sharp* 4643, 4644——Refusal of the Committee of 1864 to recommend any representation of the Metropolitan Board at the Board of Conservators, *ib.* 4659–4664——Further statement as to the total number of communications between the Metropolitan Board and the Conservancy Board, either by writing or by deputation, *ib.* 4764–4767.

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METROPOLITAN BOARD OF WORKS—continued.

3. *Unwillingness of Mr. Rawlinson to express any Opinion on the Subject:*

Efficiency of the constitution and operation of the Metropolitan Board; witness hesitates, however, to recommend their representation at the Conservancy Board, or to suggest how the Board should be constituted, *Rawlinson* 3002–3007. 3094.

4. *Declaration on the part of the Promoters of the Bill:*

Statement on the part of the promoters of the Bill that they neither promote nor oppose the claim of the Metropolitan Board, *p.* 254.

See also *Main Drainage Works.*

MILLS AND MILLOWNERS:

Petitions by sundry millowners and occupiers against the Bill, *pp.* 1, 2.

Evidence in favour of the millowners being directly represented at the new Board, *Graham* 375. 386–397. 426–458——Probability of the millowners' interests not being represented by the three members proposed to be elected from the upper districts, *ib.* 408–416——Redress generally obtained without difficulty from the millowners in regard to the regulation of high and low-water marks, *ib.* 417–421.

Objectionable practices of the millowners in dealing with the water, *Castle* 587–592——Inexpediency of trenching in any way on the rights of the millers, or of overlooking their interests; large local employment now given by the mills, *ib.* 593–595——Numerous mills not only on the Thames, but within a few miles of it, which will be affected by the Bill, *ib.* 1048–1061——Large value of many of the mills, *ib.* 1057–1059——Propriety of compensation to the millers if their business be destroyed, *ib.* 1062–1064.

Expediency of the millowners being adequately represented in the management of the river, *Castle* 1065–1068. 1075–1080. 1170, 1171——Distinction to be drawn between the rights of the millers to the use of the water and their right or claim to foul the stream by pouring their refuse in, *ib.* 1104–1114.

Absence of difficulty in reconciling the rights of the millowners and of the navigation, *Leach* 1316–1320——Important advantage to be conferred on millowners in the Thames by controlling and regulating the water, *Beardmore* 2094–2102——Contemplated protection of the interests of the millowners by keeping up the water to head marks, *ib.* 2476, 2477.

Objection to the millers having a right of access to the weirs with a view of drawing down the water, or to interfering for the prevention of obstructions and accident in times of flood; responsibility at such times of the lock-keepers under the Conservators, *Beardmore* 2480–2494——Conveniences if all the mills on the Lea and the Thames were in the hands of the governing body of each river; obstacle on account of the large compensation to be paid, *ib.* 2510–2513——Immense value of the mills by putting the Thames in a proper state; difficulty however of any direct contribution by the millers, *ib.* 2514–2518.

Numerous mills on the upper navigation; witness is not prepared to say whether these should be represented, *Burstal* 4413–4429——Several mills on the upper navigation whilst there are none on the lower, *Sir F. Nicholson* 4593–4596——Facility of the Conservators so managing the upper navigation as greatly to benefit the millers, *Thorp* 4649. 4713–4723.

Clauses proposed to be inserted in the Bill on behalf of millowners and occupiers of the upper district of the Thames, *pp.* 331–333.

Total of twenty-nine mills between Oxford and Staines, the average value of which is about 6,000 *l.* a piece, *Witherington* 5280–5283——Right always exercised by witness of keeping up the head of water, there being a high water and a low-water mark, *ib.* 5286–5292. 5301–5303——Power of the Conservators under the Bill, so as to deal with and draw down the water as entirely to destroy the value of the mills; apprehension lest they should exercise this power, *ib.* 5293–5306. 5378–5387——Expediency of the power exercised by witness of drawing down the water for the purpose of repairs to the locks and weirs, *ib.* 5307–5317.

Witness is not aware of any complaints against millowners in regard to their mode of dealing with the water, *Witherington* 5310. 5388–5396——Considerable expense doubtless necessary, if there were no navigation, in order to work the mills by preventing the water running away, *ib.* 5322–5324——Admission as to its being a benefit to witness if the water were kept at a proper depth in connection with an improved navigation, *ib.* 5325–5328——Witness claims no compensation for tolls; information hereon as to his receipts from tolls, and the receipts at other mills and locks, *ib.* 5329–5335. 5338.

Importance of the proposed clause empowering the millowners to retain water for the use of their mills, *Witherington* 5349——Evidence in support of the clause proposed on the part of the millowners relative to the repairs of the locks, weirs, &c., *ib.* 5350–5363——Want of a representation of the millowners at the new Conservancy Board, *ib.* 5364–5369——Expediency of compensation to millowners if the Conservators injure or

destroy

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Mills and Millowners—continued.

destroy the mills by altering or removing the locks, weirs, &c., *Witherington* 5376-5387——Examination in further defence of the provisions suggested generally for the protection of the millowners, *ib.* 5393 *et seq.*

Important interest of the millowners so that they should be adequately represented in the management of the river, *Rogers* 5736, 5737.

See also *Fishing Rights. Paper Mills.*

Mortgage Debt. See *Bondholders.*

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New River Company. See *Lea River*, 5.

Newbridge. Very little navigation between Newbridge and Duxford Weir, *Castle* 860, 861——Very dilapidated state of the weir near Newbridge, though not impassible for boats, *ib.* 862-869——Dissent from the view that the navigation between Newbridge and Lechlade is so unimportant that it need not be kept up, *ib.* 1115-1119. 1179.

Nicholson, Admiral Sir Frederick. (Analysis of his Evidence.)—Is one of the two members nominated by the Admiralty to the Thames Conservancy Board, 4478-4480——Very regular attendance at the meetings of the Board, 4481, 4482——Facility given to the public wishing to be heard before the Board, 4483-4485——Summary of the principal matters under charge of the Conservators, 4486-4488——Very few questions before the Conservators which affect the interests of the Metropolitan Board, 4489-4500——Particulars as to the number and class of communications which have passed between the Metropolitan Board and the Conservancy Board in the last eight years, 4491-4500.

Statement to the effect that the addition of one or two members of the Metropolitan Board to the Conservancy Board would impede rather than facilitate the transaction of business by the latter, 4501-4508. 4608-4616——Expectation that still fewer questions are likely to arise between the two Boards in the future than in the past; grounds for this conclusion considered, 4508. 4561-4571. 4578-4588.

Approval of a representation of the upper district at the new Board of Conservators; that is, if any addition be made to the Board at all, 4510. 4517. 4531-4537. 4597-4599——Little, if any, claim of the Metropolitan Board to be represented in the Thames Conservancy, as they have nothing to do with the river beyond keeping sewage out of it within certain points, 4511-4515. 4538-4548. 4576, 4577. 4600, 4601——Satisfactory working of the Conservancy Board, as constituted previously to and since 1864; 4516.

Opinion as to the entire sufficiency of a Board of eighteen members for managing the upper and lower navigation; witness in fact would rather reduce than increase the present number, 4517-4530. 4617-4627——Importance of measures for excluding sewage from the upper Thames if injurious to the river below Staines, 4538-4548——Anxiety shown by the Conservancy Board to exclude sewage from the river, 4547.

Further evidence on the question of communication between the Metropolitan Board and the Conservators, 4549-4560——Question as to issue having arisen, or being likely to arise, between the two Boards in the matter of the Chelsea Embankment, 4561-4571. 4607, 4608——Greater claim to a representation of the shipowners, river steamers, &c., than of the Metropolitan Board, in respect of the navigation and conservancy of the Thames, 4572-4577. 4628-4630——Arrangement as to the payment of the Conservators according to attendances, 4589-4592.

Several mills on the upper navigation, whilst there are none on the lower, 4593-4596——Facilities of the Conservators for obtaining information in regard to the discharge of sewage, &c., further powers being however required in order to prevent such discharge, 4602-4606——Want of more stringent powers in the Thames Embankment Act in regard to the stuff used in forming the embankment, 4608-4612——System of taking tolls at the locks in the lower navigation, none of the locks being let, 4631-4633.

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Old Windsor Weir. Very dilapidated state of Old Windsor Weir, near Datchet, *Castle* 523, 524.

Oxford:

1. *State of the Navigation and Amount of Traffic above Oxford; Question hereon as to maintaining the Navigation.*
2. *Discharge of the Oxford Sewage into the Thames to the great Pollution of the River; Preventive Measures necessary.*
3. *Suggested Representation of the Local Board of Health at the Conservancy Board.*
4. *Petitions by the University and Corporation.*

OXFORD—continued.

1. *State of the Navigation and Amount of Traffic above Oxford; Question hereon as to maintaining the Navigation:*

Statement as to the very different state of the river, in regard to navigation, above and below Oxford, in former times as well as at present, *Graham* 221–242——Examination to the effect that the Navigation Commissioners did not carry out many works for the navigation above Oxford, and that such navigation is practically a thing of the past, *ib.* 242–276. 319——Explanation as to there not having been in recent years any special meetings of the Commissioners or the committee for the district above Oxford; attendance of members for the upper district at the annual meetings of the general body or committee, *ib.* 298–318——The navigation at Lechlade and above Oxford generally is already practically gone, *ib.* 450, 451.

Importance attached to an improvement in the navigation between Oxford and Lechlade, for the carriage of coal and other articles to the district about Lechlade, *Castle* 525–540——Explanation as to the part taken by the members of the Oxford district committee in attending meetings and in looking after the state of the river, *ib.* 583–586——Question further considered as to the amount of local benefit from improving the navigation between Oxford and Lechlade, *ib.* 925–935——Insufficient receipts in the district above Oxford to meet the annual expenditure necessary for such district, *ib.* 972, 973.

Between Oxford and Lechlade the navigation will not in any case be a paying scheme, *Castle* 1029–1031——Limited amount of navigation works contemplated to be kept up in the upper part of the river above Oxford, *ib.* 1175–1196——Expediency of maintaining some weirs above Oxford for storing the water, and as a check upon the floods, *ib.* 1180. 1192–1196.

Importance of a jurisdiction over the river and the embankments above Oxford, though the navigation between Oxford and Lechlade might for the most part be abandoned, *Leach* 1366–1379——Very little navigation above Oxford further adverted to, *ib.* 1843–1851——Witness sees no objection to an abandonment of the navigation above Oxford, except for a short length, *ib.* 2054.

Statement as to the means of maintaining and improving the navigation above Oxford, without interfering with the land drainage, *Beardmore* 2226–2251——Very small prospect of traffic in the river above Oxford, so that any large expenditure on the navigation is a question of consideration, *ib.* 2242–2249.

Details as to the extremely defective state of the works between Lechlade and Oxford, and as to the extensive and injurious flooding of the lands, *Rawlinson* 2915–2931——Large outlay necessary for new works if the navigation is to be restored above Oxford; expediency in any case of keeping the navigation open for pleasure boats, *ib.* 2932–2947.

2. *Discharge of the Oxford Sewage into the Thames to the great Pollution of the River; Preventive Measures necessary:*

Gradual abolition of the system of cesspools at Oxford, the sewage having been discharged into the river for five or six years past, *Castle* 546–552——Intention to divert the Oxford sewage from the river, and to place it upon the land, *ib.* 553–556——View of the Local Board of Health of Oxford in favour of controlling the tributaries of the Thames to a longer distance than three miles, *ib.* 556–560——Approval of the sewage of Oxford being dealt with by a company rather than by the Local Board; problematical value of the sewage adverted to hereon, *ib.* 671–676.

Very unsatisfactory state of Oxford with reference to the sewage queston, *Rawlinson* 2583. 2691–2693——Direct passage into the Thames, or its tributaries, of much of the sewage of Oxford, *ib.* 2583. 2696–2701——Great injury being done by cesspools at Oxford, *ib.* 2691——Excessively polluted and disgusting state of the river about Oxford, *ib.* 2701–2705——Oxford might utilise its sewage favourably and profitably, *ib.* 3056.

3. *Suggested Representation of the Local Board of Health at the Conservative Board:*

Evidence in favour of the local Board of Oxford, and other local Boards being represented at the Conservancy Board, *Graham* 324–338. 375. 386–397. 426 *et seq.*; *Castle* 1127–1138. 1154–1155; *Rogers* 3373 *et seq.*; *Sir J. Thwaites* 3899–3903——Concurrence in the views of the local Board of Health of Oxford, and of the University, that they should be represented directly in the management of the river, *Castle* 578–586.

4. *Petitions by the University and Corporation:*

Petition by the University against the Bill, *p.* 1——Petition of the corporation and citizens of Oxford against the Bill, *p.* 2.

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P.

PAPER MILLS:

1. *As to the Effect of the Refuse from Paper Mills in polluting the River.*
2. *As to the Adoption of Remedial or Preventive Measures by the Paper Makers.*
3. *As to the Interest of the Paper Makers in the Improvement of the River.*

1. *As to the Effect of the Refuse from Paper Mills in polluting the River:*

Destruction of fish by the refuse from paper mills, *Castle* 681-684——1069-1074——Great pollution of the river by the refuse from paper mills; poisonous effect upon the fish, *Way* 3172-3184. 5236-5247. 5263.

Very secondary effect of the refuse from paper mills as compared with sewage, in regard to the pollution of rivers, *Evans* 4843-4845——Limited use of Esparto grass by the paper makers on the Thames or the tributaries, *ib.* 4863,4864——Innoxious effect of the liquid lime poured from the paper mills into the Thames, *ib.* 4879-4884——Witness contends that the alkaline liquid is beneficial rather than injurious to the river, unless it be poured in in large quantities, *ib.* 4887-4890.

Exceptional and accidental occasions of the discharge of liquid sewage from paper mills into the Thames or its tributaries, in such a manner as to be injurious to the river or destructive to fish, *Evans*, 4925-4935. 4975-4979. 5021-5031——The bleaching powder, or chloride of lime, is too expensive to be thrown into the river, *ib.* 4925-4927——Absence, generally, of injury to the river by any of the refuse from paper mills, after such refuse has become diluted with the water, *ib.* 4937-4942.

Statement as to there being no paper mills on the river above Munden, near Uxbridge, which could account for the destruction of fish at that place, *Evans* 4957-4963——Injurious effect of the refuse from white paper, but not from brown paper; that is, unless proper precautions be taken, *ib.* 4979-4981——Further statement as to the alkaline liquid not being injurious to the water beyond a certain distance from the point at which discharged, *ib.* 4989-5001——Expediency of an appeal to a jury in the event of a magistrate deciding that any river was polluted by the refuse from paper mills, *ib.* 5002-5009. 5032-5034——Expense of chloride of lime, so that it is never discharged into the river, *Wheeler* 5072, 5073.

Distance of several miles between the service of the water companies' supply at Teddington and the nearest paper mills above Staines, *Castle*, 5074-5080.

Inability of witness to detect in the water drawn above Teddington Lock any organic impurity traceable to paper mills, *Frankland* 5097, 5098——Statement as the minimum quantity of water over Teddington Lock, and the maximum of organic impurity per gallon from the paper manufacture, *ib.* 5099-5109——Innoxious character of vegetable organic matter, this being the character of the refuse from the use of Esparto in the manufacture of paper, *ib.* 5106-5111. 5117.

Self-purifying power of weirs as regards the presence of organic matter from paper mills, &c., that is in proportion to the volume of water, and the distance over which it travels, *Frankland* 5112-5118. 5133 *et seq.*——Improvement doubtless if the alkali refuse from the paper mills were not passed into the Thames, *ib.* 5123-5127——Examination in detail to the effect that the refuse from paper mills is not calculated to cause any material injury to the water of the Thames; it all depends, however, upon the quantity of such refuse in relation to the volume of the stream and the distance travelled, *ib.* 5133 *et seq.*

Further evidence in detail upon the question of injury to the Thames water by the refuse from paper mills, *Way* 5191 *et seq.*——Improbability of any impurity from the paper mills being traceable in the water at Teddington Lock, *ib.* 5218——Objectionable character of the refuse from the Esparto grass as used in paper manufacture, *ib.* 5257-5262.

2. *As to the Adoption of Remedial or Preventive Measures by the Paper Makers.*

Impracticability of the remedies suggested in the report of the River Commissioners for diverting and utilising the refuse from paper mills, *Evans* 4847-4849. 4936——Practice of paper manufacturers to dispose of the refuse which results from the first process of cutting and dusting without any of such refuse finding its way into the river, *ib.* 4850-4862——Different modes of disposing of the lime refuse arising from the treatment of the soda; obstacle to the provision in all cases of land and of tanks, so as to obviate the pouring of the liquid refuse into the river, *ib.* 4865-4878. 4986-4988.

With regard to the alkaline waste liquor from paper manufactures, it has been suggested to dispose of it either by evaporation or by distribution over land, *Evans* 4885, 4886——Whether by evaporation, or distribution over land, there are practical obstacles to thus dealing with the alkaline liquor; particulars hereon, *ib.* 4891-4924——Undue expense

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PAPER MILLS—continued.

2. *As to the Adoption of Remedial or Preventive Measures, &c.*—continued.

of recovering the alkali by the process of evaporation, more especially unless Esparto has been largely used instead of rags, *Evans* 4893, 4894. 4904–4915.

Difficulty not only as regards the necessary land, but the large supply of water requisite in order to dispose of the alkaline liquid in irrigation, *Evans* 4916-4924——Legal claims of the paper manufacturers to discharge refuse water into the stream, *ib.* 4938. 4964——Practical confiscation of the millowners' property if they are to be prohibited from sending any refuse water into the river, *ib.* 4939–4943.

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2. *Question of prohibiting Sewage Discharge into the River, and of utilising the Sewage on Land.*
3. *Question of Reading being represented on the Conservancy Board.*

1. *Practice hitherto in dealing with the Sewage of Reading; Effect as regards the Town and the Pollution of the River:*

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Sewage, &c. (*Pollution of the River*):

1. *Great Pollution of the Thames by the Discharge of Sewage and Refuse Matter in the Upper Districts.*
2. *Increased Powers required by the Conservators for preventing Sewage Discharges.*
3. *Question of increased Powers in Local Boards.*
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5. *Consideration of the Prohibitory Clauses in the present Bill.*
6. *Question of applying the Sewage to Land for Irrigation Purposes.*
7. *Suggested Representation of the Towns in the Upper Districts at the Conservancy Board, in the Matter of Sewage.*

1. *Great Pollution of the Thames by the Discharge of Sewage and Refuse Matter in the Upper Districts:*

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2. *Increased Powers required by the Conservators for preventing Sewage Discharges:*

Constant vigilance exercised by the Conservators in excluding sewage, &c. from the river, *Leach* 1260–1262——Expediency of some addition to the powers of the Conservators in regard to sewage discharges and other refuse matters; hardship, however, in requiring sewage to be diverted at once, *ib.* 1330–1345——Consideration of the present legal powers of the Conservators for the prevention of the discharge of refuse matter into the river, and of the powers proposed under the Bill, *ib.* 1677–1686.

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3. *Question of increased Powers in Local Boards:*

Character and extent of the authority contemplated in local Boards, concurrently with the authority of the Conservancy Board, in the matter of sewage, *Rawlinson* 3008–3017——Frequent obstruction on the part of ratepayers so that local Boards require some outside authority to enable them to do what is necessary, *ib.* 3015.

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SEWAGE, &c. (*POLLUTION OF THE RIVER*)—continued.

3. *Question of increased Powers in Local Boards*—continued.

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4. *Expense involved in the Exclusion of Impurities:*

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5. *Consideration of the Prohibitory Clauses in the present Bill:*

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6. *Question of applying the Sewage to Land for Irrigation Purposes*—continued.

the Maplin Sands being a very good or profitable soil to which to apply the London sewage; belief that no public nuisance need be apprehended, *Rawlinson* 2843–2848——Circumstances under which sewage irrigation works would probably be insufficient to pay their expenses, *ib.* 2868–2871——Belief that in the Valley of the Thames if irrigation works are laid out and arranged judiciously, they will pay their expenses, *ib.* 2872.

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7. *Suggested Representation of the Towns in the Upper Districts at the Conservancy Board, in the matter of Sewage:*

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WATER SUPPLY (METROPOLIS):

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2. *Quantity of the Supply.*
3. *Evidence in favour of the Water Companies paying for the Water, with reference more especially to the Benefits derived from the Exclusion of Impurities and from the Navigation Works.*
4. *Suggestions as to the actual Rate of Charge to be levied on the Companies.*
5. *Question of an increased Charge to the Consumers.*
6. *Particulars relative to the Payments made by the Companies taking their Supply from the River Lea.*
7. *Statistics as to the Capital, Income, and Profits of the several Companies.*
8. *Payment already made by the five Companies taking their Supply from the Thames.*
9. *Final Arrangement (embodied in the Bill) by which the five Companies are each to pay 1,000l. a Year to the Conservancy Board, in addition to their present Payment.*
10. *Claim of the Companies to be represented on the Conservancy Board.*
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1. *Particulars as to the Quality of the Water before and after Filtration by the Companies:*

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WATER SUPPLY (METROPOLIS)—continued.

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WATER SUPPLY (METROPOLIS)—continued.

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8. *Payment already made by the five Companies taking their Supply from the Thames:*

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9. *Final Arrangement (embodied in the Bill) by which the five Companies are each to pay 1,000 l. a Year to the Conservancy Board, in Addition to their present Payment:*

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10. *Claim of the Companies to be represented on the Conservancy Board :*

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11. *Efficiency of the Administration of the Companies :*

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